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Abstracts of Tuberculosis ***will be published at intervals as an integral part of the*** **American Review of Tuberculosis.** ***It will receive separate paging and may, if desired, be bound separately at the completion of the volume.***

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

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Social Importance of Early Diagnosis.—One of the great principles in the fight against the spread of tuberculosis consists in the rigorous supervision of confirmed tuberculous individuals and of those who have been in immediate contact with them and are potential spreaders of the disease themselves. The manifestation of the disease in adults may arise a) out of a lowering of body resistance from various causes, giving the bacilli present in the organism a chance to develop; or b) out of a reinfection, which may be one massive entrance of bacilli or successive reinoculation with small doses. Another principle of combat against the disease, therefore, is to preserve the health of children by all hygienic means and to keep up the resistance of adults and keep them from possible infection. Education of the public in elementary hygiene and in the means by which tuberculosis is preventable is an important part of the whole fight. The starting point of the problem is early diagnosis. It is, however, more important to know whether a case of tuberculosis is active, and hence contagious, than to know whether it is an incipient or an old case. It follows that the examination of the sputum of a tuberculous or one suspected of the disease is as important from a prophylactic standpoint as auscultation, percussion, temperature, and all the other means employed in order to make the diagnosis.—*Le diagnostic précoce de la tuberculose et son importance au point de vue social, E. Sergent, Progr. Méd., May 17, 1919, No. 20, 189.*

Tuberculosis Suspects.—Roubier reviews his experience with his last series of 1000 tuberculosis suspects. With an actual tuberculous lesion at the apex, the clinical and the roentgen findings harmonized in 90 per cent but the roentgen rays always revealed more extensive lesions than would be surmised otherwise. In some of the others, bronchitis masked the pulmonary lesion but there were four men with no moist râles, no symptoms of condensation and no crepitation after coughing, and repeated examination failed to reveal any physical signs of a tuberculous lesion, but the roentgen rays showed extensive infiltration and tubercle bacilli were found in the sputum. Atypical cases of this kind formed 4.5 per cent of the men with positive sputum, and they impose the necessity for raying all suspects even when daily percussion and auscultation give negative findings. In five other cases roentgenoscopy showed persistently normal findings, but tubercle bacilli were found in the sputum in some of them after expectoration had been induced with iodide. Rist declares that when nothing abnormal can be seen on the screen or roentgenogram, the lung is

unquestionably normal. Roubier adds that in these cases he had to content himself with roentgenoscopy alone; it is possible that in an instantaneous roentgenogram something abnormal might have been detected. In 1.6 per cent of the cases with positive sputum, both clinical and radiologic findings were so slight as to be only dubiously perceptible. He discusses further the cases with lesions at the base or middle of the lung, and the 307 with chronic bronchitis or permanent impediment to breathing through the nose which had caused the mistaken diagnosis of tuberculosis. This group included further seventeen cases with syphilitic or malignant lesions in the lung or an abcess or interlobar empyema, or else the men (201 cases) were merely narrow chested and suffering from exhaustion, dyspepsia or heart disease. Thus in over 50 per cent of the 1000 men the suspicion of tuberculosis proved to be unfounded.—*Quelques considérations sur la comparaison des résultats des examens cliniques, radioscopiques et bacteriologiques des crachats chez les militaires suspects de la tuberculose, C. Roubier, Progr. Med., June 14, 1919, xxxiv, No. 24, 229.*

Posture a Factor in Apical Tuberculosis.—The orthograde posture determines the apex of the lungs as the site of predilection of incipient pulmonary tuberculosis. This is due to the diminished flow of blood through the upper portion of the lung in the erect posture, and may also be due to the effects of this change on the endothelial cells lining the capillaries. The lack of blood in these capillaries causes a collapse of their walls, thus offering a chance for foreign particles and bacilli to lodge there. That the upper portion of the lung can, at times, be devoid of blood can be understood when we remember that the capacity of the lungs is more than double that needed to convey the blood usually flowing through them. It is possible, therefore, to have that portion of the lung below the entrance of the pulmonary vein engorged with blood while the upper portion is almost bloodless. The absence of a blood stream through these vessels may so injure their endothelial lining, either through the absence of oxygen, or through the presence in excessive amounts of carbon dioxide due to lack of oxygenation, as to render that area a favorable site for the lodgment, growth, and multiplication of the tubercle bacillus. This theory is supported by the known fact that animals subject to pulmonary tuberculosis show the highest portion of their lungs to be the point of predilection of the disease. This at the same time serves to disprove the theory that lack of mobility of the apex is the cause of apical involvement, for in the case of animals the caudal lobes, which show a marked predisposition to the disease, are the most mobile portions of the lungs. Posture will also explain the improvement in early active tuberculosis which follows rest in the recumbent position. Exercise in the chronic forms of tuberculosis is also beneficial by helping to drive more blood through the involved upper portions of the lung.—*Apical Tuberculosis and the Orthograde Posture, W. F. R. Phillips, Med. Rec., August 16, 1919, xcvi, No. 7, 265.*

The Complement Deviation in Diagnosis.—The technique of the test is in fundamental particulars identical with that of the Wassermann. The tubercle antigen employed is essentially the bodies of the tubercle bacilli after their fatty substance has been removed. The process of extracting the fat is that used by Wang in studying the antigenic effect of lipoids in vivo. The syphilitic antigen is an alcoholic extract of the human heart with or without cholesterin. The extract should be allowed to float on the saline for 10 minutes before being mixed. The patient's blood is collected as for the Wassermann test from an arm vein; and the serum heated to 55 to 56°C. for two hours. Or, sufficient blood for the test may be obtained from a prick in the thumb, and the serum inactivated in the same way. Where the drop method is used, the fluid for test is measured in drops from a vertically held weight fitted with a teat at a uniform rate and pressure, the technique being similar to Donald's drop method for the Wassermann. The blood suspension is prepared from defibrinated ox blood; for use a 1 per cent suspension is made up, sensitized at room temperature with 8 to 9 minimum hemolytic doses of amboceptor. The complement is that of guinea pig serum from four to eight hours old. A negative serum is indicated by a complete hemolysis in the tube containing the tubercle antigen. A positive serum is denoted where hemolysis is complete in the control tubes and absent or only partial in the tubercle antigen tube. A strong positive is indicated by +++; a moderately strong positive by ++; a weak positive by +; a doubtful positive by ?. Where there is absence of hemolysis in the tube containing syphilitic antigen as well as in the tube containing the tubercle antigen, the serum should be further tested. For this purpose the suspected serum is mixed with an equal part of saline, and to each centimetre of the mixture two or three drops

of chloroform added; the tube is vigorously shaken for ten to fifteen seconds, and placed in a water bath at 55° to 56°C. for fifteen minutes; the supernatant fluid is drawn off, and the test repeated. Where less hemolysis is observed in the tubercle antigen tube than in the syphilitic antigen tube the serum is tuberculous in addition to being luetic; where there is less hemolysis in the syphilitic antigen tube, the serum is probably only specific, and not tuberculous. The investigation deals with 104 tuberculous subjects and 220 controls, the latter including 100 positive and 100 negative Wassermann's, and 20 serums from persons clinically free from tuberculosis. The results were as follows:

	POSITIVE RESULTS			NEGATIVE RESULTS
	+++	++	+	
Tuberculous cases.....				
Treated with tuberculin...	14	16	11	8
No tuberculin.....	30	7	11	7
Normal serum.....				20
Negative Wassermann serum.....				100
Positive Wassermann serum.....	7	10	24	59

All the positive Wassermann serums were negative when further tested with the chloroform differential method. The results give therefore 85 per cent positives out of 104 tuberculous subjects, and no positive reactions in the controls. The non-specific reactions observed by others are due to the presence of lipoids in their antigen and in parts to insufficient heating of the serum.—*Diagnosis of Tuberculosis by the Complement Deviation Method, Chung Yik Wang and J. Crockett, Brit. M. J., July 5. 1919, No. 3053, 7.*

Chest Fluoroscopy.—The president of the board of tuberculosis examiners at Camp Lewis finds himself in disagreement in some respects with the article of Diemer and MacRae, on the value of chest fluoroscopy. In dealing with such a complicated subject it must be considered from all points of view, rather than from a selected portion of the material, as was the case with their work in their analysis of the roentgen-ray findings in soldiers rejected on account of pulmonary tuberculosis. The entire report on the subject will be published later, and here Matson says that opinions in regard to the value of the fluoroscope can only be properly formed after a full consideration of the method as used in the examination for tuberculosis is placed before one. He describes the organization and the plan of examination, and as a participant in the fluoroscopic examinations, with Diemer and MacRae, wishes to receive his share of the comment and criticism. The preliminary examiners were selected from the Camp infirmaries, an effort being made to select officers with some special knowledge of the diagnosis. Hence half of the board was constantly changing, while the other half constituted the permanent half, with larger special knowledge and experience. He cites the special instructions given to the preliminary examiners as regards verbal and physical examinations. The conditions found determined the acceptance of the man, if the responses were satisfactory. When a case fell into the classes, with abnormal physical findings or bad family history, the results of inspection, percussion, and auscultation were recorded on the written form, and the man was sent first for fluoroscopic examination, and then to the refer examiner who went over all the forms but did not reëxamine unless the roentgenologic or other findings were positive or very suspicious, or tuberculosis was indicated in the family history. Rejections were made by the refer examiners only, and always after reëxamination by them. These rejections were based on physical findings, supported or unsupported by roentgenology. No one was rejected for roentgenologic findings alone. The tabulation of results in the Diemer and MacRae article, however, is a comparison between the findings of the fluoroscopist and those of the preliminary examiners, as the rejections are based on the examinations of the refer examiner, who was the arbiter. "The distinction between preliminary and refer examiners and their respective duties is not brought out in their article. The term 'special examiners' used in the article, should read 'refer examiners,' and 'clinical examiner' should read, 'preliminary examiner.' After recalling that the preliminary examiners, aside from the ten qualified, comprised officers for the most part inexperienced in chest examination, whereas the fluoroscopists had had extensive experience, it must be admitted that this comparison is not a rational one." The diagnoses of Diemer and MacRae were on the whole inferior to those of the inexperienced preliminary examiners, and the final diagnosis of tuberculosis was made by the refer examiner in every case, and needed no fluoroscopic confirmation. The discussion of rejected cases follows, and special points of criticism of the article by the authors named above. Of 2367 men diagnosed tuberculous by the preliminary examiners, 1843

were reported tuberculous or suspicious by the roentgenologist. The refer examiners, however, confirmed the diagnosis of tuberculosis in only 884 cases, of which 570 presented chronic active lesions causing rejection, while 214 were diagnosed healed tuberculosis and accepted. One case is of special interest and is reported. But if the roentgen ray had been accepted for the rejection the country would have lost a good soldier in this case. While appreciating fully the value of roentgenology in the diagnosis, careful physical examination generally predicts what the other can reveal, but the reverse is not universally the case. The author appreciates the services and ability of Diemer and MacRae, and offers his article in a spirit of constructive criticism, with a sincere desire to be fair to both methods. He thinks, however, that Diemer and MacRae have claimed more for roentgenology than it should be expected to reveal.—*The Value of Chest Fluoroscopy, R. C. Matson, J. Am. M. Ass., June 28, 1919, lxxii, No. 26, 1887.*

Roentgen Examination of Tuberculosis Suspects.—Détré found in 80.2 per cent of the 844 soldiers sent to him as suspects that the assumption of tuberculosis was not sustained by the roentgen findings. In these 676 negative cases, the bacteriologic findings were always concordant. The apex shadow frequently looked opaque and grey, but it cleared up and kept clear when the man coughed. By having the subject lean forward or to one side, the second interspace comes into view when otherwise it is hidden by the shadow of the clavicle. In some of the cases, positive findings need not necessarily be of a tuberculous nature. In 40 per cent of the positive cases there was a pleural reaction at the base. Some of the cases also presented the findings characteristic of hilum tuberculosis with a glandular focus, such as has recently been described in children. Three illustrations show the typical findings.—*La radioscopie chez les soldats suspects de tuberculose, G. Détré, Presse Méd., July 10, 1919, No. 39, 384.*

Exact Shade Measurement in the X-Ray Diagnosis of Thoracic Disorders.—Such terms as loss of transparency, semi-opaque shadow, veiled appearance, complete opacity, commonly used in describing the density of shadows in X-ray plates, are quite insufficient for both scientific and practical purposes. They are no more precise than would be such expressions as slight temperature, high temperature, considerable fever, etc., if used in place of numeral thermometric readings. Normal and pathological X-ray shadows, if of like extent and form, can be distinguished only by differences of shading. Mild and recent pathological changes, as well as congestion and edema show a relatively light tint, while processes of consolidation are generally manifested in deep shadows. Estimation of the amount of fluid present in pleurisy or hydropneumothorax is based in part upon the tint. In serial studies of individual cases of tuberculosis, changes in the depth of shadows are of great significance in showing whether the lesions are progressing in extent or depth, are undergoing sclerosis and calcareous infiltration, or are being absorbed. Two original methods of densimetry or shadow notation are described. The first consists in comparing the shadows at diseased areas with those at certain definite landmarks, viz., the ribs, which correspond in density to 2 or 3 cm. of water; the clavicles, 4 to 6 cm.; the heart, 7 to 8 cm.; the ribs and clavicles superimposed 6 to 9 cm.; the ribs and heart superimposed, 9 to 11 cm., and the liver, 15 to 20 cm. The depth of shadow at the affected area is thus described as costal, clavicular, cardiac, costoclavicular, costocardiac, or hepatic, or is simply noted numerically according to the number of centimeters of water to which it is equivalent. The second procedure consists in radiographing along with the thorax a series of thicknesses of tin or other metal constituting a scale extending from one to thirty centimetres of water. By noting the density of a diseased area and subtracting from it the density of the corresponding area on the sound side of the body, the degree of pathological increase of density can be numerically expressed. In the case of a rarefying process such as emphysema or pneumothorax, the diseased side is subtracted from the sound. The first of the two procedures is simpler, requiring no metallic densimeter, and in practice gives sufficiently precise notations.—*La valeur et la mensuration de la teinte dans le radiodiagnostic des affections thoraciques, M. de Abreu, Bull. d. l'Acad. d. Méd., May 6, 1919, lxxxi, No. 17, 6081.*

Radiologic Findings with Disease of Glands at the Hilum.—Méry with his collaborators class these *adénopathies hilaires* by the roentgen findings in three groups, as they show by illustrated summaries of fifteen cases in children. The three types of findings may be observed in turn in the same child, all starting in the hilum, close to the sternum in the first three interspaces, and running a slow course, with persistence of the physical signs and tending usually to recovery. There is evidently an inflamma-

tory process in the ganglia of the hilum inducing reactions in the neighboring tissues. They have encountered cases of this kind more often since the pandemic of influenza. This may have reactivated dormant processes. In the discussion that followed, Rist emphasized that the fact of retrogression of the lesion does not exclude the possibility of the lung having been involved in the process.—*Les signes radiologiques des adénopathies hilaires, H. Méry, H. Salin, G. Détré and L. Girard, Bull. d. l. Soc. Méd. d. Hôp., May 22, 1919, No. 17, 471.*

Roentgenographic Diagnosis in Renal Tuberculosis.—In the Mayo Clinic it is the rule to make a complete roentgenographic examination of the urinary tract in every case where renal tuberculosis is suspected. Shadows may be found in approximately 20 per cent of patients with renal tuberculosis; the aid of cystoscopic data may be required in some instances for their correct interpretation. However, positive evidence of tuberculosis may be obtained by this method in certain cases when all other clinical data fail, and when cystoscopic examination is impossible. Shadows due to renal tuberculosis may be arranged in three definite groups: (1) multiple scattered small areas; (2) one single or a few localized areas of 1 cm. or more in diameter; (3) large irregular, diffuse areas involving either a large portion or the entire kidney. The first and second groups represent scattered calcareous deposits. The second is most easily confused with kidney stone. The tuberculous shadow can usually be differentiated by (1) the variability in its density, (2) by its lesser density throughout than is typical of stone, (3) by its irregular and indefinite outline. In the third group, the kidney is usually of putty-like consistency in the area causing the shadow. With complete caseation of the kidney the shadows are most striking; they may assume the outline of a complete cast of the kidney, and are usually irregularly lobulated, the density varying in the different portions. Tuberculous shadows must also be differentiated by careful study of the plates from extrarenal shadows. Roentgenographic evidence of renal tuberculosis may be of value in determining the existence of bilateral involvement. Pyelography is occasionally valuable in the identification of renal infections of a doubtful nature and in the identification of doubtful shadows in the renal area. The cystogram may also give data of value.—*Roentgenographic Diagnosis in Renal Tuberculosis, W. F. Braasch and F. A. Olson, Surg. Gynec. and Obstet., June, 1919, xviii, No. 6, 555.*

Rôle of the X-Ray in the Diagnosis of Long-Standing Renal Tuberculosis.—Many cases of tuberculosis of the kidney can be correctly diagnosed by the use of the cystoscope and ureteral catheter; but in some cases the employment of these instruments is impossible on account of changes in the bladder mucosa. In other cases there is a long-standing chronic tuberculous process with sluggish ulceration and only a few pus cells and no tubercle bacilli are found in repeated catheterized specimens. In cases in which the disease has progressed to complete destruction of the kidney with caseation and deposition of calcium salts, these salts will cast a shadow on the X-ray negative varying in density according to the extent of the process. Where the kidney substance has been largely replaced by calcified caseation a complete outline of the kidney and even the ureter may be seen on the X-ray plate. It is in just these cases that the X-ray will often be the determining factor in diagnosis. It should therefore be a routine procedure to employ the plain X-ray examination previous to cystoscopy and uretral catheterization in all suspected cases of renal tuberculosis, as in some cases the definite diagnosis may be made by this method alone. Whenever possible, however, catheterization of the other ureter should be done to establish the integrity of the opposite kidney. The shadows cast by various types of tuberculous kidney vary from the small indefinite shadow cast by a calcified tuberculous area about a calyx to the characteristic lobulated shadow of a kidney consisting entirely of calcified abscess cavities. The X-ray of such a kidney is unmistakable, but the smaller, indefinite shadows are occasionally difficult to differentiate from renal calculi, and from various extrarenal shadows such as calcified glands, gallstones, etc. A true renal calculus is rarely associated with renal tuberculosis, but in a few cases a calcium oxalate stone has been seen in the pelvis of a tuberculous kidney. Such a stone gives a picture quite different from that encountered when a tuberculous area in a kidney is wrongly diagnosed as stone, when exposed at operation. In the latter case, it is best to remove the diseased kidney, if the other is normal. If the other kidney shows diseased areas, no operative procedure should be attempted. Details of five cases are given with illustrative plates.—*The Rôle of the X-Ray in the Diagnosis of Long-Standing Renal Tuberculosis. J. A. C. Colston and C. A. Waters, Johns Hopkins Hosp. Bull., September, 1919, xxx, No. 343, 268.*

Axillary Dulness in the Diagnosis of Pleural Disorders.—The author calls attention to the utility of percussion in the axilla and infraäxillary region in the early diagnosis of certain pleural conditions. Metapneumonic pleurisy was at times detected in the serous stage by this means, one or two days before the process became purulent. The lives of some patients were saved, furthermore, through the detection of purulent effusions previously overlooked because of the absence of symptoms. From experience in over a thousand cases, he asserts that, given posterior thoracic dulness, axillary or even infraäxillary dulness should direct attention to the possibility of an effusion or adhesive process in the pleura. In acute or subacute chest affections, dulness in the axilla, i.e., above the transverse nipple line, indicates in over three-fourths of all cases the presence of fluid, especially when the level of axillary dulness is higher than that posteriorly. Infraäxillary dulness alone indicates, under similar conditions, the presence of fluid in about one half of all cases. Observation of axillary dulness should always incite the practitioner to the performance of exploratory puncture which, by revealing effusion early, permits of prompt surgical treatment where infection exists. The puncture should be done first in the posterior dull area, then in the axillary and infraäxillary area. In some purulent effusions, with or without accompanying pulmonary disease, axillary puncture alone gave positive results. In such instances, in which the pleura had early become adherent at the base but remained free laterally, the infraäxillary type of drainage recommended by Berard gave promptly successful results.—*Séméiotique: le signe de la matité axillaire dans le diagnostic des processus pleuraux, G. Mouriquand, Presse Méd., March 24, 1919, No. 17, 149.*

Thoracic Puncture Fluids.—Much useful information for diagnosis and treatment can be obtained by investigation of thoracic puncture fluids. Even if aspiration is not indicated for treatment, 5 or 10 cc. may be withdrawn with an exploring syringe for purposes of examination. In a serous fluid coagulation of the fluid should be prevented if possible. If a clot forms it generally contains most of the bacteria and cells and should be examined. More use might be made of immunity tests in serous tuberculous fluids. Though the predominance of the small round cell (so called lymphocyte cell) is almost invariable in simple tuberculous effusions, it is not so in effusions following pneumothorax. In the latter, predominance of polymorphonuclear cells is not uncommon. In the author's series tubercle bacilli were found in 63.6 per cent of pyopneumothorax cases, in 55.5 per cent seropneumothorax, and in 25.7 per cent of apparently simple tuberculous effusions. In the same series, the following percentages of secondary infections were noted: in pyopneumothorax, 18.2; in seropneumothorax, 11.1; in simple tuberculous effusions, none. —*Clinical Pathology of Thoracic Puncture Fluids, S. R. Gloyne, Lancet, May 31, 1919, No. 4996, 935.,*

Attenuation of Tubercle Bacilli.—The object of this short paper is to demonstrate the effect of long-continued and regular subculturing of pure cultures of human, bovine, and avian tubercle bacilli on artificial media containing glycerin. This process has been continued without interruption for twelve years, and the cultivations are luxuriant and grow as readily as in the first year of subculturing. They retain all their characteristics and selective appearances, and can be easily identified as distinct types of tubercle bacilli.—*Attenuation of Human, Bovine, and Avian Tubercle Bacilli. N. Raw, Lancet, March 8, 1919, No. 4984, 376.*

Bacillus Tuberculosis in Tonsils of Children Clinically Nontuberculous.—The excised tonsils from forty-five children were examined for the presence of tuberculosis by means of the inoculation test on guinea pigs, histological examination of sections, cultures on Dorset egg medium and direct smears. In all cases the histologic examinations showed no evidence of tuberculosis, and no tubercle bacilli were demonstrated in any of the cultures or direct smears. The inoculation test yielded a positive result for tuberculosis in only one of the forty-five cases. The bacillus was of the human type. The child was four years of age; the father and mother were living and well; there was no evidence of tuberculosis in the past history of the child; a previous admission to the hospital had been for feeding. Otitis and enteritis had developed, but no tuberculosis had been detected and a von Pirquet test had been negative. At the time of removal of the tonsils the child was well developed and well nourished, and had no palpable cervical lymph nodes. The children in this series came from a community where the supply of cow's milk was far less likely to be contaminated with the tubercle bacillus. Furthermore, but two children in the group were from families in which there were cases of tuberculosis, and none of the children gave clinical evidence of tuberculosis. Although tuberculosis of the tonsils in children is not rare, yet most of the cases occur when there are tuberculous lesions to be found elsewhere

in the body, especially in the cervical lymph nodes. The occurrence of the tubercle bacillus in the tonsils of children without clinical evidence of tuberculosis, however, is not frequent.—*Bacillus Tuberculosis in Tonsils of Children Clinically Nontuberculous, R. S. Austin, Am. J. Dis. Child., July 1919, xviii, No. 1, 9.*

The Organisms of Secondary Infection in Pulmonary Tuberculosis.—The blood of 216 cases of pulmonary tuberculosis was cultured, of which 36 were far advanced, and hematogenous infection was found in 7 of the cases. Four of these, however, were staphylococci, and were probably skin contaminations. Of the others 1 was Micrococcus tetragenus, 1 pneumococcus type II and 1 pneumococcus type IV, with a streptococcus. These results were obtained in broth cultures. All blood cultures in solid media were negative. The case with pneumococcus II was febrile and the case with pneumoccocus IV associated with the streptococcus was afebrile. Both of these positive cultures were in far-advanced cases. The occurrence of pneumococci and streptococci in the blood, as found by these authors, is rather low in view of the findings of Pettit and those of Brown, Heise and Petroff. Of 8 cases which died only 1 yielded a positive blood culture postmortem, pneumococcus type II. This case was negative when examined one week before death. The case in which micrococcus tetragenus was found was moderately advanced. Thirty per cent of the sputa of the 216 cases revealed pathogenic pneumococci and streptococci.—*The Organisms of Secondary Infection, Especially Pneumococci and Streptococci, in Pulmonary Tuberculosis, Corper, Donald and Antz, J. Infect. Dis., 1919, xxiv, 198.*

The Rôle of Measles in Etiology.—A survey was carried out at Camp Grant, under Col. Bushnell's direction, for the purpose of determining the relation between measles and tuberculosis. The work lasted seven months from February to September, 1918. All patients had been examined at the time of their induction into service and their records kept on file at the Tuberculosis Clearing Station. Cases admitted to the Base Hospital with measles were examined two weeks later and six weeks after admission. In all, 596 cases of measles were thus examined. The findings were as follows: one was found to have crepitant râles at the second examination in the right upper lobe, which persisted after cough, but which had entirely cleared up at the third examination, one month later; one was a frank case of reactivated tuberculosis, but this patient had been under observation as suspicious prior to his attack of measles; one was a frank reactivation of tuberculosis attributed directly to the measles. These figures, plus similar ones gathered from other cantonments, seem to vitiate the theory that measles is a predisposing factor towards pulmonary tuberculosis.—*Measles a Predisposing Factor towards Pulmonary Tuberculosis, R. S. Berghoff, Illinois M. J., February, 1919, xxxv, No. 2, 62.*

Latent Tuberculosis in Infants.—Spolverini has applied tuberculin skin tests to 900 supposedly nontuberculous children under one year old, and obtained a positive response in 63. This is 7 per cent in all, but only 0.80 per cent of the 8 infants three or four months old; 2.44 per cent of the 22 from four to six months old, and 3.66 per cent of the 33 from six to twelve months old. The predisposing causes in the infants and in the parents and environment are tabulated, with the pathologic findings in the infants. Radioscopy showed that the glands at the right hilum were affected more often than the left; those at the left hilum do not show unless they are of considerable size, being concealed by other shadows. These glandular lesions could be detected only by raying. From the clinical point of view the tracheobronchial glands are the first manifest localization of the disease. His table reëmphasizes that familial contagion is the most dangerous factor, and that in the cities search should be made for infants born into an infected environment and they should be taken away, into the country, with close medical surveillance.—*Sulla tubercolosi latente nel poppante. Ricerche cliniche e sperimentali, L. M. Spolverini, Rivist. d. Clin. Pediat., April 1919, xvii, No. 4, 169.*

Tuberculosis in Children.—At the Oklahoma City Tuberculosis Dispensary 135 children were examined during 1918. Of these, 50 gave a history of exposure to open cases, 70 pere exposed to suspected cases and 15 gave no history of exposure. One hundred and sixteen gave a history of measles, 50 had pneumonia, 34 had influenza and 86 gave a history of whooping cough. A history of the following symptoms was obtained: cough in 59 cases; expectoration in 29; pain in the chest in 24; pleurisy in 14; hemoptysis in 2; night sweats in 11; loss of flesh in 25; loss of strength in 34; hoarseness in 17; fever in 19; loss of appetite in 28; disturbed digestion in 27. Physical examination revealed the following: weight below standard, 73; height below standard, 17; general appearance good in 95, fair in 48, poor in 21. Type of chest normal in 121, abnormal in 14; super-

ficial lymph nodes palpable in 110 (some were not reported); tonsils hypertrophied in 80; dulness elicited by percussion in 89 (with few exceptions the dullness was interscapular); D'Espine's sign was present in 35; râles in 29. Sixty-nine were examined roentgenographically and the roentgenogram showed tuberculosis of the tracheobronchial glands alone in 11 cases; tuberculosis of the tracheobronchial glands with peribronchial thickening in 29; tuberculosis of the tracheobronchial glands and peribronchial thickening, with involvement of the lung tissue in 19; nontuberculous infection in 3. The diagnosis as recorded in the 135 cases was: tuberculosis of the hilum alone in 34; tuberculosis of the hilum with peribronchial and lung involvement in 44; doubtful, 40; cases with nontuberculous infection, 5; negative, 12.—*Tuberculosis in Children with Special Reference to Tracheobronchial Glands, L. J. Moorman, Okla. State M. Ass. J., May 1919, xii, No. 5. 123.*

Multiple Tuberculosis in Childhood.—The patient, a boy of fourteen, well and vigorous but undersized at the time of the report, had been under almost continuous observation for ten years. The first lesion, noted at the age of four, was an abscess in the left ulnar region, following a fall in which he had struck his arm. Following this a tibial ulcer developed, and later inguinal, epitrochlear, axillary, and costal tuberculous ulcers; mesenteric gland and possibly peritoneal tuberculosis; cervical and bronchial gland—and pulmonary infection. At one time he reacted locally to 0.00001 gm. tuberculin. For a year he has failed to react positively to a Pirquet test. Trauma undoubtedly played an important part in the onset of the disease, as is frequently the case especially in bone and joint tuberculosis. The first infection, however, was certainly not at the site of where the disease was first manifested (the ulna). The history and family history indicate that the primary infection was alimentary and presumably of bovine origin.

At the time of his first entry to the dispensary the abdomen was enlarged; later a mass was palpable in the descending colon. Six years later tuberculosis of the mesenteric lymph glands, and possibly tuberculous peritonitis developed. The pulmonary infection has been very slow and benign, showing chiefly as infiltration of the right lung.

Epitrochlear and inguinal node abscesses did not develop till a year after the ulnar and tibial lesions. Swelling of the legs was noted in the first report and afterward occasionally commented on; it was possibly due to an intraäbdominal lesion. A course of antisyphilitic treatment (mercury and the iodides) was given at first, on account of the obscure symptoms, but without effect. A thorough course of tuberculin therapy was carried out at the dispensary for five years, but no demonstrable benefit resulted. Excellent results however were obtained by life away from home in the country and a sanatorium regimen. The last visit to the sanatorium lasted seven months. The patient returned in good health with no signs of abdominal disease, scars of old adenitis and his weight above normal. For two years since, his condition has been satisfactory without any retrogression. Sanatorium treatment is of the greatest value because it means regulation of rest, exercise and diet, life in the open, and discipline, and above all, relief from strain and worry. The Pirquet test was of especial value in reaching the correct diagnosis. This case also illustrates the favorable prognosis of tuberculosis in childhood. Unless generalized miliary tuberculosis and meningitis supervene, children can recover from a large amount of tuberculous involvement.—*Multiple Tuberculosis in Childhood, A. K. Krause, Med. Clin. North Am., May 1919, ii, No. 6, 1781.*

Bovine Tuberculosis in Children.—Austin analyzes 24 cases of tuberculosis in children and infants with reference to the bovine or human type of infecting organism. The ages ranged from two and one-half months to eleven years, all but 7 died and 14 were autopsied. Determination of the type of bacillus was based on the result of inoculations of rabbits with known amounts of culture. His results show 7 of the 24 to be infected with the bovine type of tubercle bacillus. The 3 living cases, 1 of human type and 2 of bovine are cases of bone or joint tuberculosis apparently localized. There is little indication regarding higher or lower percentage of bovine infection at different age periods. One out of 9 under two years showed bovine infection and all 7 of bovine type are under six years. While this is a small series, finding 7 out of 24 cases to be caused by bovine type of organism emphasizes the importance of this variety of the tubercle bacillus in tuberculosis of children; and, as it is generally considered that bovine infection is through cow's milk the fact that these seven cases occurred in Chicago where all milk is supposed to be pasteurized, points to the necessity of home pasteurization.—*Bovine Tuberculosis in Children, R. S. Austin, Am. J. Dis. Child., April 1919.*

Cattle Must Be Tested for Tuberculosis Before Being Shipped out of Any State.—Beginning July, 1919, the shipment of cattle interstate without having them properly tuberculin tested will be prohibited—with a few exceptions—by a regulation issued by the Secretary of Agriculture. The enforcement of this new regulation will, it is believed, be of great assistance in preventing the further spread of tuberculosis among live stock, and having the work practically under State and Federal supervision at all times will serve to bring about uniformity.

The Department of Agriculture, through its Bureau of Animal Industry, is now actively coöperating with the State live stock sanitary officials and cattle owners of 42 States in the eradication of tuberculosis from live stock.

Recent legislation in several of the States has made it possible to proceed with the work where heretofore it has been impossible to do so. Federal funds available for the work are insufficient to meet present demands, and now that the cattle owners are finding the work to be of such advantage and importance the demands will increase rapidly.

Most activities are in the "accredited-herd" work with the owners and breeders of pure-bred herds of cattle who wish to free their herds from tuberculosis and have them placed on the list as "accredited."

Some "area work" is being conducted. Under this plan a community or county or some other unit decides to have all the cattle in the area tuberculin tested with a view of completely eradicating the disease as soon as possible. In order that the "area work" may be successfully carried on, the fullest coöperation of the cattle owners in the territory must be obtained, and any attempt to proceed with the work without the good will and hearty coöperation of the people will fail.

Appropriations by the States for the coming fiscal year for live stock tuberculosis eradication aggregate about $2,000,000. Part of this sum will be used to indemnify partially the owners of cattle found to be tuberculous. Most of the States now have laws permitting the payment of indemnity and the Federal department also pays some indemnity when funds are available. With the exception of valuable breeding animals, it is found most advisable to consign the tuberculous cattle for slaughter and thereby dispose of them to the best advantage. In the greater portion of "reactors" the disease is found to exist to but a slight extent, making the meat fit for food—thereby causing a great saving. The carcasses of such cattle after being passed for food by trained inspectors, usually bring about the market price, which sum, deducted from the appraised value of the live animal, leaves the amount of loss. Under the more recent laws, this loss is divided between the owner, the State, and the United States—each standing one-third—except that in most cases the State is limited in the amount that it can pay and the United States is always limited to the payment of $50 for a pure-bred animal and $25 for a grade.

Owners realize that these slightly diseased cattle may at any time become a source of danger to the healthy animals of the herd and that the latter may break down from the disease and die or become of little or no value. The value of healthy cattle in any herd, after the tuberculous ones are taken out, always increases, and it is a source of great satisfaction to the owner that he has a healthy herd or that he is doing everything in his power to make it so. Cattle from accredited herds are commanding increased prices over those that are not, and those from herds that are in the process of being accredited are also being sold at advanced prices.

The second list of accredited herds and those that have successfully passed one tuberculin test in preparation for the accredited list is expected to be ready for distribution July 1. Requests now received indicate that 100,000 copies will be required to meet demands. This pamphlet of about 100 pages will contain the names and addresses of about 4000 cattle owners, representing about 91,000 cattle, whose herds have passed one or more successful official tuberculin tests applied under the coöperative plan for accrediting herds of tuberculosis-free cattle.

Up to April 1, 1919, the total number of herds under supervision for the eradication of tuberculosis was about 9800, containing about 200,000 cattle; and since that time a large number have been added to the list.

These cattle owners have realized the great importance of trying to maintain a healthy herd, and have pledged themselves to coöperate with the State and Federal officials in every possible way to free their cattle from the disease.

Experience covering a period of several years has proved beyond a doubt that a herd can be freed of tuberculosis and kept free, and that the procedure is entirely practicable and within the power of a large percentage of cattle owners. But to accomplish the desired results everyone connected with the project must do his best to follow plans, in every detail, that will bring it about. The fullest coöperation on the part of the herd owner is very important. A herd of cattle may be declared to be free from tuberculosis by the officials in charge of the work, and then, through some oversight or by

carelessness, diseased animals may be added to the herd or members of the herd may be allowed to associate with tuberculous cattle. In such case, infection may again be introduced and cause further losses and much trouble.

Since the inauguration of coöperative tuberculosis eradication work the number of cattle tested with tuberculin each month has increased.

A total of 252,114 cattle were tested from July 1, 1918, to May 1, 1919. Minnesota leads among the Northern States with about 25,000. Virginia leads the Southern States with 15,796—followed closely by Alabama with 15,094.—*Matters of Current Interest, Am. J. Vet. M., July 1919, xiv, No. 7, 25.*

Tuberculosis in New York Herds.—Dr. W. J. Hoskins, Dean of the Veterinary School of New York University, in speaking before the twenty-ninth annual convention of the New York State Veterinary Medical Society, in Brooklyn, on July 24, stated that in a large measure the high cost of meat, milk, and butter is attributable to the large numbers of cattle destroyed because of tuberculosis each year and the fact that farmers have been unable to replace cattle that have been thus sacrificed. He values the cattle that succumbed to tuberculous disease last year at $8,000,000, and urges that the Legislature be petitioned to appropriate $2,000,000 annually to fight this disease among livestock. He claims that ten thousand persons die annually in this State from tuberculous diseases contracted from dairy products, and that 40 per cent of mothers and 23 per cent of the infants are undernourished because of the poor quality of the milk produced by unhealthy cows. The society adopted resolutions urging that dairy farms and milk bottling establishments be systematically inspected at regular intervals. —*News of the Week, Med. Rec., August 2, 1919, xcvii, No. 5, 202.*

Nature and Treatment of "Scrofulous" Ophthalmia.—Wolff apologizes for retaining this term, but says it conveniently classifies the cases in which at some time there has been a tuberculous inflammation in the eye, leaving it hypersensitive to the tuberculous toxin. Certain lymph glands in the vicinity may also have been the seat of a tuberculous process which may or may not have subsided into a latent stage. In any event, the tuberculous toxin occasionally gets mobilized, and when it reaches the hypersensitive eye it induces phlyctenules. The latter do not develop in animals, and tuberculous processes in the neck glands seldom occur in animals except possibly in the hog. Wolff urges examination of the eyes when tuberculous processes are found in the cervical glands in hogs. It is possible that obstinate eczema may likewise be a manifestation of local toxic action on a healed tuberculous lesion which has left the area hypersensitive. Other germs play a secondary but important rôle. Treatment may aim to abolish the tuberculous foci generating the toxins which act on the eye, or it may aim to reduce the sensitiveness of the eye. A course of tuberculin would aid in the latter, but roentgen treatment of the tuberculous glands has proved the simplest and easiest method to eradicate the toxin-generating foci. No operative measures were attempted except to aspirate when necessary. At most 4 H. units were given at a time, with an aluminum filter 5 mm. thick. Roentgen exposures have no influence on the phylctenular inflammation or corneal ulcer itself, but exposures of the tuberculous glands dry up the streams of toxins at its source. As adjuvant he has found silver fluorescine useful, especially in a 5 per cent salve in white petrolatum, applying a little every hour in the conjunctival sac. The same principles were applied in treatment of benign tumors of the eye, and the glandular lesions in the neck retrogressed without recurrence in three or four cases, but the eye lesion was not influenced, in contrast to what is observed with the phlyctenular ophthalmia. The latter disappears as the glandular lesions retrogress, as he shows in a table of fourteen cases. After removal of a sarcoma of the conjunctiva in another case, the eye was subjected to roentgen exposures and no harm seemed to have been done, no microscopic changes from them were evident when the eye was enucleated over two years later on account of recurrence of the sarcoma. Encouraged by this, he applied the roentgen rays directly to the eye and with brilliant success in his first two cases. One was a girl of eighteen with iridocyclokeratitis and numerous nodules in the iris; the other patient had keratoscleritis with an ulcerating nodule in the cornea. The lesions were entirely cured in a few days, but there was recurrence in the second case. In three other cases of scleritis great benefit was derived, but not so promptly. The lymph glands had better be exposed at the same time.—*Scrofulous Ophthalmia, L. K. Wolff, Nederl. Tijdschr. v. Geneesk., April 12, 1919, ii, No. 15, 1168.*

Tuberculous Iridokeratitis.—Detailed histories of four cases of tuberculous iridokeratitis are presented. Parsons classifies tuberculous lesions of the iris as follows: (1) Miliary tubercle; (2) confluent or conglom-

erate tubercle; (3) tuberculous iritis. The four cases presented were all of the third type, which clinically may be indistinguishable from other forms of chronic iritis, but microscopic sections reveal tubercles or the presence of bacilli. In case 2 one lesion appeared anteriorly near the pupillary margin, with a second directed backward, and not far from the root of the iris. In case 3, one nodule was definitely at the root of the iris and one also in the ciliary body, with a secondary, or associated, tubercle in the substantia propria. In case 4 the infiltration was so intense that actual tubercle tissue could not be detected in the iris. All of the cases were females, ages ranging from eighteen to forty-six years. In case 1, although no primary source of infection could be found, there was a suggestive family history of tuberculosis. Case 2 showed inflamed glands of the neck. Case 3, in whom no actual clinical lesion could be found, exhibited a positive tuberculin reaction after the eye had been removed. Case 4 was a robust heavy woman, but gave a marked focal reaction to 2 mgm. of O. T., with a corresponding general reaction. In the cases the nodules were more numerous on the posterior than on the anterior surface of the iris. They consist at first of mononuclear leukocytes without any epithelioid cells. When left for a long time and allowed to increase in size large mononuclear cells with pale staining nuclei are found in the center of the nodule. Tubercle bacilli could be demonstrated only where central caseation of the individual tubercle had occurred. In the more malignant form where a parenchymatous keratitis ensued, the iris was generally studded with tubercles, the center of which was usually necrotic. The sections, especially those of cases 3 and 4 show a distinct change of the endothelial cells of the cornea. In animals inoculated, as well as in human cases recorded by Stock, Descemet's membrane always remained intact. Case 4 of this series is an exception to this rule, the membrane behind being covered with lymph, and above by a distinct infiltration of lymphocytes and numerous giant cells suggesting early necrosis.

Verhoeff has stated that the size and number of lesions are greater at the filtration angle than elsewhere. Sections from this series of cases do not necessarily substantiate this fact, although showing the almost constant association of corneal involvement with tuberculous iritis. The iris itself is more involved than any other part of the eye; and the lesion in the cornea is more often opposite the pupillary area than about the filtration angle. There was evidence of an active or acute inflammation of the chor-

oid in only one case—Case 4. Case 3 showed what might develop into a retinal tubercle.—*Tuberculous Iridokeratitis, F. T. Tooke, Am. J. Ophthal., June 1919, ii, No. 6, 395.*

Fulminating Tuberculosis of Tracheo-Bronchial Glands.—Dumas describes five typical cases of this unusual form of tuberculosis as he observed it in five African soldiers at Salonica. The men entered the hospital with the diagnosis of bronchitis and died in two or three months, necropsy showing tuberculous involvement of the mediastinal lymphatic system with secondary invasion of pleura and pericardium. Some of the glands broke down into a purulent focus while the lungs escaped almost entirely. The cases all proved rapidly fatal, none lasting for over three months. Radioscopy differentiates the disease but the temperature determines the prognosis. The clinical picture is more like those observed in children than in adults, but even in children such a fulminating form is almost unknown while it seems to be the rule in the blacks of the French colonies in Africa.—*Adénopathie trachéobronchique tuberculeuse à marche rapide, A. Dumas, Lyon Méd., April 1919, cxxviii, No. 4, 180.*

Bilateral Spontaneous Pneumothorax.—A man, aged thirty-two years, a victim of pulmonary tuberculosis had a violent coughing spell, marked by a sudden pain in the right side and followed shortly by dyspnea. The diagnosis of spontaneous pneumothorax, right, was made. Aspiration of the right chest was immediately done and 2000 cc. of air withdrawn; the patient promptly rallied and became comfortable. Ten hours later, it became necessary to aspirate again. The escape of air from the lung increased and it was soon found necessary to aspirate at shorter intervals. Because of extensive disease of the left lung, the latter did not contain enough aerating tissue to sustain life. Nevertheless, to determine the point, the trocar was allowed to remain open in the chest wall on the pneumothorax side, creating, in effect, an open pneumothorax. Within a very few minutes, the patient showed great distress and aspiration was done. Effusion soon appeared and this, in a short time, showed infection. The amount of fluid soon became great and required frequent aspiration. Air began to diminish in quantity. On the fourteenth day a fistula occurred in a needle track. The skin opening was fortunately trapped and, while coughing expelled air and fluid (pus and seropus), there was no intake through the sinus. It was now decided to attempt to

bring the lung down; to this end, continuous siphon drainage was established, with the result that by June 18 (the twenty-third day) breath sounds were heard over the right upper lobe as far down as the third rib, and respiration became much easier and the patient was able to lie on the pneumothorax side. On the seventh day an extensive emphysema occurred and involved the chest, abdomen, scrotum, penis, neck and face. June 19 the patient complained of shortness of breath; aspiration of the right chest was done, but little relief was afforded. The trocar found the base of the lung in the fourth space. Examination of the left lung showed diminution of breath sounds. June 20 the patient was found to be much worse. While fair respiration was being performed by the right lung, the left lung presented no sounds whatever. The patient complained of some pain in the left lung, but of very little dyspnea. Aspiration of the left chest relieved the patient of 1800 cc. air, but did not improve the general condition. He was comfortable until his death, which occurred twenty-four hours after the second rupture. —*Case of Bilateral (Double) Spontaneous Pneumothorax, E. A. Gray, Illinois M. J., May 1919, xxxv, No. 5, 252.*

Effusion with Induced Pneumothorax.—Breccia ascribes to the compression on the vessels in the hilum of the lung the disturbance in the circulation which is the main cause of the pleural effusion with therapeutic pneumothorax for pulmonary tuberculosis. This is also the cause of the effusion with heart disease, the enlarged heart pressing on the hilum and compressing its vessels. This explanation is a guide to treatment, as the presence of fluid in the pleura may push down the diaphragm or displace the mediastinum, and thus mislead one as to the absolute pressure in the pleura in inducing the pneumothorax. The effusion is liable to be rapidly resorbed, modifying completely pressure conditions with the pneumothorax, unless measures are taken at once to maintain the curative pressure on the lungs which abates as the fluid is absorbed. If the effusion shows a tendency to remain stable, it should be left alone, as also when the effusion displays a progressive tendency unless it becomes excessive, when it requires treatment as for any pleural effusion. The pleural effusion alone may exert the desired pressure on the lung, and in connection with the pneumothorax may regulate automatically the hydropneumothorax. He discusses further the indications when the effusion is purulent, mentioning parenthetically that the 12,000 soldiers passing through his service in the last two years amply demonstrated that the lung is able to expand and recuperate function almost always after a war wound of the chest affecting a sound lung. In the tuberculous lung, however, conditions are different, and time alone will show what share the pleuritic changes have in the final outcome of recovery under induced pneumothorax.—*Contributo allo studio delle pleuriti essudative nel pneumotorace terapeutico della tubercolosi polmonare, G. Breccia, Rivist. Crit. d. Clin. Med., April 19, 26 and May 3, 1919, Nos. 16, 17 and 18.*

Serous Membrane Tuberculosis.—Two cases are presented, one of tuberculous peritonitis and one of tuberculous pericarditis, both in negro boys 14 years of age. In the first case the abdomen was greatly distended, and even after the removal of 4 liters of clear serous fluid, the abdominal wall was still tense and tender. There was a high irregular fever and leukocytosis. In the second case, the chief symptom was pain over the heart, with shortness of breath, increase in the area of cardiac dulness, irregular fever and rapid pulse. Under the X-ray the heart shadow had not the characteristic triangular form extending up to the neck.

Tuberculous peritonitis may be either ascitic or dry. In children the ascitic form is usually easily diagnosed; in adults it may be confused with cirrhosis of the liver or carcinoma of the peritoneum. Typical constitutional symptoms and tuberculous foci elsewhere aid in the diagnosis. In the dry form diagnosis is more difficult, the symptoms suggesting various surgical conditions, so that the true condition is often discovered only at operation. Frequently curious abdominal tumors are found and lead to errors. These tumors are formed by the rolled-up omentum, by encapsulated fluid, by matted intestines, by enlarged glands, or by pelvic masses—the first named being the most common. Tuberculous peritonitis is a serious tuberculous manifestation and the prognosis is always grave. Of the patients who had been in the hospital, 48, or 32 per cent died, 16 were cured, and 71 improved. Forty-three cases were heard from after leaving the hospital: of these 14 had died, 7 were reported living but not quite well; 22 were reported living and well. The chief question in the treatment of tuberculous peritonitis is that of operation. Statistics are unsatisfactory, and the value of operation is not proved. Tuberculous pericarditis is much less common than tuberculous peritonitis, and a less serious manifestation. Tuberculosis of any serous membrane is a local anaphylactic reaction in an already infected person. Only on this basis can the acute onset, the fibrinous exudate and the serous effusion be explained.

A subserous focus of disease may cause serositis without the tubercle bacilli actually reaching the surface. The bacilli are in fact rarely found in the serous effusion. More than one serous cavity is often affected. Autopsy records of 35 cases of tuberculous peritonitis show: 12 cases had an associated peritoneal and pleural and 9 more showed pleural adhesion without demonstrable tubercles; 2 cases had associated peritoneal and pericardial tuberculosis, and 1 more an adherent pericardium without demonstrable tubercles; 1 case showed tuberculosis of all 3 serous membranes; 2 cases had adherent pleurae and pericardium without demonstrable tubercles; 1 case, peritoneal and pleural tuberculosis with adherent pericardium without demonstrable tubercles.—*Serous Membrane Tuberculosis, L. Hamman, Med. Clin. North Am., May 1919, ii, No. 6, 1747.*

Tuberculous Pericardial Effusion.—A man of 21 on admission to the hospital complained of weakness, headache, pains in both sides of the chest, cough, and shortness of breath. Physical examination showed relative dulness over the left lung in front, impaired note over the lower part of the left chest in front, with pleural friction and râles. Later the chest showed rhonchi throughout. Both physical examination and the X-ray showed a large pericardial effusion; 500 cc. of clear fluid was aspirated, but the sac filled repeatedly and frequent aspirations were necessary. Large quantities of fluid were removed; 2050 cc. on one occasion, over 1000 cc. several times. The fluid contained lymphocytes and was sterile, which clearly pointed to tuberculosis. The special features of the case are the extreme distention of the pericardial sac, the large quantities of fluid removed at aspiration, the marked relief afforded by the early aspirations, and the remarkable tolerance shown in the later stages to the presence of large accumulations of fluid.—*Case of Recurring Effusion into the Pericardial Sac, H. B. Roderick, Lancet, June 7, 1919, No. 4997, 980.*

Tuberculous Peritonitis.—It has become a custom with some surgeons when operating for tuberculous peritonitis to remove the tubes whether there is a mixed infection or not, in order to close an avenue for the entrance of tubercle bacilli. It is often difficult to determine where the disease in the peritoneum started. Whether the tubercles are always brought through the lymph channels or whether it is possible that some may come through the intestine by a sort of diapedesis, the tuberculous trouble of the peritoneum seldom comes from the vagina or uterus, to be poured out at the end of the tube. Such a case has never been demonstrated. The point is that tuberculous peritonitis is of systemic origin, and that, while the tubercles are deposited in the peritoneum in large amount, they are rapidly absorbed after the simple operation, and the few that may be in the uterus or tubes are also cared for by Nature. The only condition in which the removal of the tubes is justifiable in this operation is when another kind of infection has taken place in the tube either before or after the tuberculous deposit on the peritoneum. Then in many cases we should remove the pus tube completely. But even then simple resection of the tube or some part of it may be sufficient. A brief note of a case is given which shows that pregnancy may take place and a successful delivery occur after a conservative operation for tuberculous peritonitis. It is true it is sometimes difficult to diagnose these cases, and operation for other conditions may reveal a tuberculous peritonitis. Carstens describes his own technic as follows: "In my earlier cases I washed out the peritoneum with a 1 : 10,000 mercuric chloride solution. A quart of the solution is poured in, the opening is closed with the hand, and the body is shaken so that the fluid comes in contact with every part of the peritoneum. I think this irritates and stimulates the peritoneum—probably produces phagocytosis. I do not know whether the mercuric chloride does any good, but I know it does no harm, as I empty the peritoneum and then put in a saline solution—gallons and gallons of it—and wash the peritoneum out thoroughly so as to be sure that there is no mercuric chloride solution left behind to produce poisoning. I then sew up the abdomen with No. 2 plain catgut in layers, closing first the peritoneum, then the muscle and then the fascia with a running suture. I never sew up the skin. I use sterile adhesive plaster, and the wound generally heals promptly. Formerly I used silkworm-gut or silk sutures, but as these act as a drain, and in the tract of each suture a deposit of tubercles made its appearance and each stitch hole showed a dark red spot as seen in healing or healed tuberculous sinuses, I stopped this method of closure. Drainage of the wound is not considered, because, first of all, it does not drain, and secondly, draining is liable to result in the development of fistulas and ulceration of the bowel."—*Desirability of Preventing Sterilization in Young Women, when Operating for Tuberculous Peritonitis, J. H. Carstens, J. Am. M. Ass., July 5, 1919, xxiii, No. 11.*

Tuberculous Cirrhoses.—In the liver, kidneys, salivary glands and pancreas we see specific granulation tissue develop on the

basis of tuberculosis, spread diffusely, contract and give rise to cirrhotic processes which entirely resemble cirrhoses due to other causes. In tuberculous cirrhosis of the liver the interstitial process is primary, the transformation of the tissue is secondary. A splenic tumor does not belong to the pure picture of tuberculous cirrhosis. The diagnosis can only be made with the microscope. The disease is caused by tubercle bacilli of low virulence or by a relatively small number of bacilli in a carrier of high resistance.—*Ueber tuberkuloese Lebercirrhose, tuberkuloese Schrumpfniere und analoge Erscheinungen granulierender tuberkuloeser Entzuendungen in Pancreas und Mundspeicheldruesen, E. Kirch, Arch. f. path. Anat., 1918, ccxxv, No. 2.*

Gastric Tuberculosis.—Razzaboni gives the microscopic findings in a case of tuberculosis of the stomach in a woman of sixty, with complete recovery after subtotal gastrectomy. The symptoms from the stomach had first been noted about two years before the operation. The process was of a neoplastic type along with diffuse inflammatory lesions. When last seen, three years and a half later, she was still well.—*Gastrectomia subtotale per tubercolosi gastrica a forma pseudo neoplastica, G. Razzaboni, Policlin., May 1919, xxvii, No. 5, 153.*

Intestinal Tuberculosis.—In view of the uncomfortable symptoms of intestinal tuberculosis and the difficulties of giving relief, anything that will increase our medical armamentarium effectively will be welcome. About six months ago Saxtorph published his results with the intravenous injection of calcium chloride in intestinal tuberculosis. Fishberg has tried this in his hospital and private practice with results which he thinks warrant recommendation of the method. In some cases Saxtorph's reports were fully confirmed; one or two injections gave relief. The method is effective in early cases of intestinal tuberculosis. The benefit is reduced gradually with the longer continuance of the symptoms. When the diarrhea in a tuberculous patient is due to dietetic indiscretions, to the catarrhal condition of the intestinal mucous membrane, or to slight intestinal ulceration, an intravenous injection of 5 cc. of a 5 per cent solution of calcium chloride will give prompt relief. When, however, the intestinal symptoms are due to extensive ulcerations—especially to amyloid infiltration of the intestine—the chances of attaining relief from the pain and annoying diarrhea are remote. Similarly, when the abdominal pains are due to irritation of the intestinal mucous membrane by the contents of the intestine, relief may be attained by intravenous injection of calcium chloride. When, however, the pains are due to localized peritonitis over deep intestinal ulcers, or to peritoneal adhesions, which are not uncommon in tuberculous subjects, calcium chloride is impotent to give relief. The mode of action of the drug can only be surmised. We cannot explain it on the theory of lime starvation, said to be a strong etiologic factor in tuberculosis, because it does not relieve other symptoms. On the other hand, Loeb found that calcium salts stop contact irritability of muscle and hypersensitiveness of the nervous system induced by various salts. It has also been found that calcium salts impede and even stop intestinal peristalsis, and, at times, even counteract the effects of certain laxative drugs.—*Calcium Chloride as a Palliative Agent in the Treatment of Intestinal Tuberculosis, M. Fishberg, J. Am. M. Ass., June 28, 1919, lxxii, No. 26, 1882.*

The Sexual Functions in Women in Relation to Defense Against Tuberculosis.—Lasbennes tabulates the statistics of the tuberculosis mortality at Madrid since 1900, classifying it by sex and age. His figures show a striking reduction in the tuberculosis death rate in women during the childbearing age and later in comparison to the male death rate. Up to the age of twenty the female death rate keeps about the same as the male or surpasses it. From ten to nineteen the proportional percentage was males, 41.26, 40.91, 38.22, 47.42 and 41.24, while in females the corresponding figures were 58.74, 59.09, 61.78, 52.58 and 58.76. After twenty the female death rate ranged from 29.59 to 49.46 as the extreme figures, while the male death rate ranged from 50.54 to 70.41, and averaged over sixty. If experiences elsewhere confirm this relative lesser receptivity of women and the greater receptivity of girls after puberty, the practical deduction would be to prescribe matrimony in certain cases of "pretuberculosis" instead of forbidding marriage in such conditions, as is often done. There is a possibility also that ovarian treatment might prove an effectual adjuvant in treatment of tuberculosis.—*Influence of Sexual Functions in Women on the Defense against Tuberculosis, L. Lasbennes, Medic. Ibera, May 17, 1919, vii, No. 80, 123.*

Tuberculosis of Intestines.—A girl of 17, suffering from pulmonary tuberculosis for three years, had been operated for appendicitis eight months previous to the report. The appendix was found normal. After the operation a persistent enteritis and colitis developed, causing loss of weight and strength,

and tubercle bacilli appeared in the stools. The pulmonary condition also grew worse. Roentgen ray examination showed a very rapid emptying of the small intestines as well as of the colon; fluoroscopic and radiographic examination of the colon by means of a barium enema showed a definite filling-defect at the lower pole of the cecum and the ascending colon. At operation tuberculosis of the transverse and ascending colon, cecum and ileum was found with a large mass involving the junction of the distal ileum and the cecum; many small tubercles were seen on the large intestine. The last 12 inches of the ileum, the cecum, the ascending and part of the transverse colon were resected.—*Case of Tuberculosis of the Intestines with a Defect at the Cecum, P. M. Lund, Am. J. Roentgenol., September 1919, vi, No. 9, 453.*

Tuberculosis of the Sphenoid.—A colored woman, aged thirty-one, complained of intermittent fever, loss of weight, pain in the head, localized chiefly in the occipital region, but radiating toward each mastoid; later it extended towards the right ear. Physical examination showed a polypoid mass in the region of the posterior end of the right middle turbinate, and a mucopurulent discharge far back in the nasal cleft on the same side. On transillumination the right antrum appeared dark. The X-ray showed a distinct clouding of the right ethmoid region, with duling of the bony outline of the right sphenoidal fissure; the lateral view showed marked clouding of the sphenoidal sinuses. There was nothing to indicate an acute pulmonary tuberculosis. At operation the right sphenoidal sinus was full of friable tissue resembling granulation tissue, a considerable amount of which was removed. On section this tissue proved to be tuberculous. The antrum appeared to be healthy except posteriorly where the mucous membrane was thick and edematous; the posterior ethmoid cells were found to be full of pathological material, and the bony walls necrotic; the floor and anterior wall of both sphenoidal sinuses were similarly involved. All the diseased material was removed as far as possible. The polypoid mass in the nasopharynx proved to be tuberculous tissue and was removed. The wounds healed promptly and the patient reacted favorably. Tuberculosis of the nasal sinuses is rarely reported. The symptoms are those of a chronic sinusitis. The constitutional symptoms of tuberculosis may be slight. The treatment should be surgical in addition to constitutional treatment with the use of tuberculin. If the disease can be eradicated the prognosis is good, but in such extensive cases as the one reported, a recurrence is to be expected.—*Tuberculosis of Sphenoid Sinus, T. D. Kernan, Laryngoscope, May, 1919, xxix, No. 5, 276.*

Erythema Nodosum and Other Skin Lesions in Tuberculosis.—Tuberculids or paratuberculoses are sometimes defined as a group of skin affections, associated with tuberculosis of other structures of the body, but which do not themselves show the anatomic picture of tuberculosis, to which they consequently seem to have only an indirect relation. Some of the well recognized members of this group are acnitis, lichen scrofulosorum, and acne scrofulosorum. Dermatologists are not agreed as to the causative factor of these lesions, some believing that they are due to "tuberculous toxins," while others hold that the lesions are due to actual reactions to hematogenously distributed tubercle bacilli. Recently Stokes of the Mayo Clinic has discussed the frequent association of erythema nodosum, purpura, and erythema multiforme in patients who suffer from more or less well concealed forms of tuberculosis. This writer believes that such lesions are cutaneous reactions to hematogenously distributed tubercle bacilli, deposited in a hypersensitive skin, and originating in a tuberculous focus, perhaps unrecognized for years. Other investigators have noted the association of tuberculosis and erythema nodosum, and the question remains whether the association is of etiologic significance or merely one of coincidence. According to the definition of a tuberculid, erythema nodosum might be classed perhaps in this group of skin affections, as there is no evidence at hand to warrant the assumption that the lesions are due to hematogenously distributed tubercle bacilli. The work of Rosenow will be recalled, particularly the production of lesions suggesting erythema nodosum in animals by the intravenous injection of a diphtheroid Gram-positive diplobacillus, which he found in a series of eight cases of erythema nodosum. Stokes points out that the pathology of erythema nodosum is such that it seems a rash assumption to attribute it to a single type of organism. But he did not make microscopic and bacteriologic studies of the skin lesions in his cases. He did study the cervical or axillary glands in a few cases, and while many glands were found tuberculous, it is not safe to assume that also the associated skin lesion necessarily must have been due to reactions to the tubercle bacillus. The difficulties in the way of bacteriologic and microscopic study of skin lesions in patients are apparent; but such study is, of course, the only way to substantial progress. The association of erythema nodosum and other skin manifesta-

tions with tuberculosis is of great interest, and the exact nature of these skin lesions requires further investigation.—*Current Comment, J. Am. M. Ass., July, 1919, lxxiii, No. 3, 196.*

Pityriasis Rubra Pilaris.—The authors describe a case of this condition seen by them in the Soudan and discuss at length the diagnosis of the disease from allied or similar disorders. Their conclusion is that the pityriasis rubra pilaris of Devergie is a disease quite distinct from the lichen planus of Erasmus Wilson and probably also from the lichen neuroticus of Unna, which may be the same as the lichen ruber of Hebra. It is probably caused by a toxin which may arise as an anaphylatoxin, of which the anaphylactin factors are amboceptors present in the skin cells and due to action, at some time or other, of the tuberculous toxin. It is a disease quite distinct from acnitis or lichen nitidus and from lichen scrofulosorum. Many points indicate a partial similarity of causation with ichthyosis. From the latter disease it is to be differentiated clinically by not dating back to within a short period after birth and by the presence somewhere of the associated erythrodermia. From the lichen spinulosus of Devergie it is distinguished by the eruption being general, by attacking the hands, and by the follicular slug being scaly and not shiny. From pityriasis rubra it is distinguished by the relatively slight amount of erythema, by the small scales, by the typical hard conical papules in the follicles on the dorsal aspects of the first phalanges of the fingers, by the absence of constitutional symptoms, and by its benign and chronic course. The authors also describe the differential diagnosis from the lichen convex of Castellani, the keratosis suprafollicularis of Unna, the lichen planus of Erasmus Wilson, the lichen neuroticus of Unna, and a number of other skin conditions. The treatment must be long continued, and in a recent case must aim at neutralizing the exciting toxin.—*Sudanese Examples of Two Common Hyperkeratoses, A. I. Chalmers and A. Innes, J. Trop. Med. and Hyg., June 2, 1919, No. 11, 97.*

Tuberculosis of the Cervix Uteri.—Primary tuberculosis of the cervix is extremely rare, probably not more than 15 or 20 cases having been reported. Of secondary tuberculous infections of the cervix about 150 cases have been reported. Many others have probably been unsuspected, or have been diagnosed as cancer, syphilis, etc. Infection in secondary cases may be by the blood stream from the primary focus, by direct extension of the process from neighboring organs—tubes, ovaries, uterus, etc., or by external means. In primary cases, the infection must be from external sources. Coitus is the most frequent method of external infection in tuberculosis of the cervix. Although there are no statistics to show how many cases are due to some lesion in the husband, probably all the primary cases and a large percentage of the secondary cases can be attributed to this cause. Infection from handling with unclean hands, infected instruments in making examinations, etc., is also possible. There are four varieties of tuberculosis of the cervix commonly mentioned, and two rare forms. These are: (1) miliary, (2) interstitial, (3) vegetating, (4) ulcerating; and the rare forms: (5) catarrhal form of Schutt, (6) inflammatory form of Cotte. In the majority of cases all types begin in the cervical canal; in the later stages all types develop into the ulcerative form with purulent vaginal discharge and more or less hemorrhage. The subjective symptoms of tuberculosis of the cervix are vague and indefinite. As in many cases the uterus, tubes or ovaries are involved, symptoms may be referable to these organs. Leucorrhea is the most common symptom; the discharge is slight and mucopurulent in the early stages, becoming later profuse, purulent and offensive. Slight bleeding after coitus is fairly frequent. In late stages there may be considerable blood in the discharge. In most cases the general condition is good unless there is an active tuberculous process elsewhere. Amenorrhea may be a symptom. All types and stages of the disease resemble carcinoma. In distinguishing between the two, the history of the case, the age of the patient, and the appearance of the discharge are to be considered. Tuberculosis occurs more frequently in younger patients during the period of sexual activity. The purulent discharge differs from the blood-stained serum characteristic of cancer. Pain is slight and indefinite in tuberculosis. The diseased tissues in tuberculosis are soft and velvety to the touch; in cancer, friable. It is desirable to take a specimen for study in any case; in some cases resort must be had to guinea-pig inoculations and the von Pirquet test. The method of treatment must depend upon conditions of the individual case. Where there is an active tuberculous process elsewhere, excision of the local process will be of no benefit; but where other lesions are healed or dormant and the cervical lesion progressing, a conservative or radical operation may be indicated. Where uterus and tubes are extensively involved and the question of child bearing is not to be considered, a panhysterectomy is indicated; in cases

where the lesion is local, and the general health good, amputation of the cervix preferably with the cautery, or cauterization of the infected areas should be done. The prognosis is good if the process is definitely localized, and the infected portion can be completely eradicated. A case in a married woman aged 27 is reported. The only symptom was an occasional slight vaginal hemorrhage, which was also noticed regularly after coitus; general health excellent. On palpation of the cervix there was a nodular feel about the os, especially on the posterior side, the examining finger being slightly stained with blood. The speculum examination showed a region of bright red color about one-half inch in width about the os, with a small ulcer on the posterior side; a few small grayish and yellowish nodules in the visible portion of the canal. A specimen removed from the posterior lip showed tuberculosis. A vaginal hysterectomy was done. Microscopic examination showed tuberculosis of the tubes, fundus of the uterus and cervix of the miliary type with early ulceration. Convalescence was good; and the general health a year later was excellent, but there was a foul leucorrhea, indicating apparently a recurrence of the tuberculous process.—*Tuberculosis of the Cervix Uteri, G. A. Moore, Surg., Gynec. and Obstet., July, 1919, xxix, No. 1, 1.*

Tuberculous Origin of Lymphogranulomatosis.—Näslund found nothing to suggest a tuberculous origin at necropsy of a typical and extreme case of lymphogranulomatosis in a boy of four. None of the internal organs or tissues showed any changes even suspicious of tuberculosis. An emulsion of one of the lymphogranulomatous mesenteric glands was injected into the peritoneum of two guinea-pigs and both died of generalized tuberculosis. The tubercle bacilli found in the guinea-pigs were true to the human type, as also those recovered from white mice and rabbits. The lesions found in the animals corresponded to those induced with ordinary human tubercle bacilli, but some of the rabbits developed also certain changes which seemed to resemble in every respect typical lymphogranulomatosis, along with the ordinary typical tuberculous changes. The extensive researches reported, with four pages of bibliography, set solid, all tend to confirm the assumption that lymphogranulomatosis is a form of tuberculosis, the individual reacting forces determining the form in which the disease manifests itself. The tubercle bacilli involved are not necessarily attenuated in virulence.—*Lymphogranulomatosis of Tuberculous Origin, C. Näslund, Upsala Läkarefören. Förhandl., September 10, 1918, xxiii, No. 5–6, 229.*

Tuberculous Lymphoma and Tuberculosis.—The entire supplement of the *Upsala Läkareförenings Förhandlingar*, issued July 20, is devoted to contributions by Wallagren on this and other phases of tuberculosis. In his main contribution he deals with the relationship of scrofulous glands to future tuberculosis. He has used the material of the Upsala Chest Clinic to throw light on a subject in which contending views have long been maintained. According to the followers of Marfan child scrofula immunizes against tubercle, while Aufrecht, years before, announced the exact opposite. The author endeavored to follow up 256 cases of surgical scrofula—cases in which operation had been performed—and obtained data in 251. He found that 95 of these were dead, while of the balance 129 could be examined by himself or other medical men. The cause of death in the 95 could be fixed so that the net number amounted to 224. It appeared that, combining the living and dead, 158 subjects had sound lungs, 62 had some form of tuberculosis in after life, of which 46 were cases of pulmonary location, while in the few scattering cases no opinion was reached. The percentage of lymphoma patients to present pulmonary tuberculosis in nearly 1,000 cases was 15 in outside material; while in the author's cases it was a little above this figure. These figures are somewhat higher than in control cases, but do not prove that lymphoma predisposes to other forms of tubercle. Apparently both Marfan and Aufrecht represented extreme viewpoints and the author's figures suggest a mean between the two.—*Editorial, Med. Rec., June 14, 1919, xcv, No. 24, 1011.*

Influenza and Tuberculosis.—The author reviews the influenza epidemic among the 175 tuberculous patients and the 50 nontuberculous employees of the Montefiore Home Country Sanatorium, Bedford Hills, N. Y. and comes to the following conclusions: (1) The epidemic of influenza appeared at the sanatorium several weeks later than at New York City, which is forty miles south, and only forty-eight hours later than in the nearest village, a half mile from the institution. (2) Tuberculous and nontuberculous subjects seem to have been equally susceptible to influenza, the incidence in each case being twenty-four per cent. (3) Early and advanced cases were equally affected. (4) Pneumonic consolidations oc-

curred as frequently in the nontuberculous as in the tuberculous. (5) There was a mortality of 11.4 per cent due to the epidemic. (6) Careful observation for four months, and reëxamination of all patients so affected at the end of this period, showed that all the patients but two were none the worse for their experience, their general condition being as good as might have been expected normally. (7) So far there seems to be no increase in the number of tuberculous patients seeking admission to our sanatorium, as a result of influenza, and more cases are erroneously sent to us for treatment on account of basal lesions than in corresponding periods of the past two years.—*The Effects of Influenza on Pulmonary Tuberculosis, B. Stivelman, N. York M. J., July 5, 1919, cx, No. 1, 20.*

Influenza After-Effects.—An account is given of the influenza epidemic of 1918 which struck Buffalo with the suddenness of a cyclone. The disease appeared October 1, with 21 reported cases. By October 14, they had the highest number reported in one day, namely, 1886 cases with 48 deaths from influenza, 7 from pneumonia and 7 from bronchopneumonia. From that date on there was a gradual decline. It was a physical impossibility for physicians to see most of the patients more than once, hence many cases of pneumonia were reported only as influenza. It was only after the crest of the epidemic wave had passed that anything like accuracy in morbidity statistics was possible. Gram gives an account of the measures taken by the health authorities; the prohibition of assemblages, etc., and the temporary increase of hospital facilities. "Our influenza was like a prairie fire—short and drastic. Every influenza patient was either convalescent or dead within five days from the onset of the attack." Exact knowledge is wanting as regards the sequelae of the epidemic, and an after-survey was undertaken, follow-up cards being distributed to every influenza victim under an appropriation by the city authorities. The field work occupied about two months, and the results are shown in tabulated form. On the first examination 748 cases were found reporting after-effects—501 have since recovered, and 216 are reported as recovering. Four deaths have occurred, but whether they were due to the after-effects or not is hard to say. Only 1 death out of the 4 was caused by tuberculosis. There were 220 cases of respiratory disorders, and 27 of these at least were tuberculosis. Out of the 27, 11 were already on their records as reported cases of tuberculosis before the influenza epidemic, and could not be charged to it. Only 8 cases could be positively diagnosed. Several were in families with tuberculous records. The first important observation is the small number of sequelae as compared with the total number of influenza cases, and the high percentage of recovery. It seems definitely established that there is nothing to be feared as regards tuberculosis as a sequel. The results also show the value of the early and vigorous measures employed for prevention.—*The Influenza Epidemic and Its After-Effects in the City of Buffalo: A Detailed Survey, F. C. Gram, J. Am. M. Ass., September 20, 1919, lxxiii, No. 12, 886.*

Relation of Influenza to Bronchitis and Tuberculosis.—The diagnosis of influenza is easy in epidemics with both bacteriological and clinical evidence, but very difficult when occurring endemically. Then the diagnosis must be made on clinical grounds for the most part, and identical symptoms may result from bacteria of several varieties and not from the influenza bacillus alone. An inquiry in regard to a history of influenza in 1058 tuberculous and non-tuberculous cases gave the following results: (1) In 416 cases of pulmonary tuberculosis, 112 began with an attack of influenza, 122 had one or more attacks of influenza after the onset of their disease, 30 were uncertain which came first. Of the remaining cases giving no history of influenza, 55 were early, 66 moderately advanced and 31 far advanced. (2) In non-tuberculous cases, there were: 62 chronic bronchitis beginning with influenza, 306 chronic bronchitis with influenza during their course; 3 fibrosis of one lung beginning with influenza; 7 morbus cordis with attacks of influenza; 19 bronchitis with enlarged tonsils or adenoids and attacks of influenza; 245 of chronic bronchitis without history of influenza.

In the majority of cases in group I, the so-called influenza was probably not influenza at all, but tuberculosis, and the activating organism the tubercle bacillus. Other organisms are frequently present in the sputum of tuberculous patients, and may be involved in the causation of "influenzal" attacks in these patients. The diagnosis of influenza should not be made unless in the presence of an epidemic, or unless the bacillus influenzae can be isolated in pure culture from the sputum. One ought to be sure that pulmonary tuberculosis has been excluded, otherwise the early stage of tuberculosis will be frequently overlooked.—*The Relation of Influenza to Bronchitis and Tuberculosis, J. A. O'Reilly, Long Island M. J., May 1919, xiii, No. 5, 122.*

Carcinoma of the Testicle Mistaken for Tuberculosis.—The differential diagnosis between carcinoma and tuberculosis of the testicle is generally easy considering the rarity of the former in comparison with the frequency of the latter. Besides, in the majority of cases of tuberculosis the diagnosis can be clinched by finding deep vesiculoprostatic lesions. Nevertheless, an error is possible as shown by the following case: A soldier, thirty-four years of age, giving a history of injury to the testicle while in the saddle, was admitted with swelling of the testicle and hydrocele, the latter having recurred after tapping. Two distinct swellings could be made out, the lower one hard and the upper one surrounded by fluid. They were both painless. Along the vas deferens could be felt two small nodular swellings, the prostate seemed normal, the seminal vesicles could not be felt, and the urinary apparatus was not disturbed. The general health of the patient was below par. A diagnosis of tuberculosis of the testicle was made and the patient advised of the necessity of removal of the testicle, which he agreed to. The error was discovered at operation. The lower tumor was a sclerocystic-chondromatous degeneration of the whole testicle, while above and independent of the testicle was found a multilobular tumor which proved to be carcinoma.—*Sur quelques difficultés de diagnostic entre le cancer et la tuberculose du testicule, F. Cathelin, Progr. Méd., February 1, 1919, No. 5, 40.*

Anisocoria Due to Apical Pleuritis in Syphilitics.—Inequality of the pupils in a subject exhibiting definite indications of syphilis is generally accepted as an unfavorable prognostic sign, suggesting early involvement of the nerve centres and tabes or general paralysis. Yet anisocoria in the syphilitic may be completely independent of central nervous involvement; it is often caused by the apical pleuritis associated with a more or less torpid, fibrotic, sclerosing pulmonary tuberculosis. In such instances it is due to excitation or paralysis of the pupillodilator fibres which pass into the first dorsal and the third cervical ganglion through the *rami communicantes*. Not infrequently a stage of dilatation of the pupil on the same side, due to excitation, is succeeded by one of contraction resulting from destruction of the pupillodilator fibres. Lung tuberculosis is very frequent in syphilitics, and is especially likely in these patients to assume the fibrotic type. In fact, fibroid tuberculosis should be thought of as a definite diagnostic sign where indications of syphilis are being looked for. Fibroid pleurisy at the apex occurs in the majority of cases of tuberculosis in syphilitics. In most of these, again, there is enlargement of the supraclavicular lymphatics, symptomatic of the apical pleuritis or apical pleuropulmonary sclerosis. Finally, in some there is present in addition the unilateral pupillary dilatation or contraction referred to.—*L'inégalité pupillaire par pleurite du sommet chez les syphilitiques, M. Sergent, Bull. d. l'Acad. d. Méd., March 11, 1914, lxxxi, No. 10, 284.*

Treatment of Syphilis in Tuberculous Patients.—Elliott presents the data in ten cases treated with arsphenamin. His observations lead him to conclude that mercury should be used with great care in tuberculous patients, that the deleterious effect is not immediate, but appears several months after the institution or administration of the drug. Therefore, arsphenamin seems to be the drug of choice in such cases, but should be given in small doses and at long intervals, inasmuch as the ordinary dosage accentuates active foci and is prone to cause a flare up in latent lesions.—*Treatment of Syphilis in Tuberculous Patients. J. A. Elliott, Am. J. Syph., April, 1919, iii, No. 2, 291.*

Tuberculosis Causing Disordered Heart-Action.—The subcutaneous tuberculin test was done by seven medical officers in 300 unselected cases of disordered action of the heart and the results are reported by MacIntyre. Positive reactions were obtained in 32 cases; negative reactions in 268 cases and local reactions only in 97 cases.—*Tuberculosis as a Causative Factor in Disordered Action of Heart, H. R. MacIntyre, Bull. Canad. Army Med. Corps, May, 1919, i, No. 8, 110.*

Pathogenic Pneumococci and Streptococci in the Sputum in Pulmonary Tuberculosis.—Since the streptococcus and the pneumococcus are highly pathogenic for mice, the authors injected the sputum of tuberculous cases into mice, cultured from the peritoneal fluid and compared results with those of previous experiments with direct cultural methods. The sputum of 57 definite cases of pulmonary tuberculosis was examined in this way; 29 far advanced, all but one open; 24 moderately advanced, all open; 4 incipient, 2 open. The results showed 33 per cent sputums negative; in the positive sputums pneumococci types III and IV predominated, some of type II; and a few (4 per cent) streptococcus hemolyticus and viridans were found. For purposes of comparison the saliva of 10 cases of pulmonary tuberculosis and of 21 normal individuals was examined in the same way.

There was very little difference in the sputum and saliva of tuberculous cases; 5 of the 10 cases were negative in both; in the positive cases pneumococcus of types III and IV predominated. The findings in the tuberculous cases differed little from the normal cases; they also corroborate previous results from direct culture methods, from which it was concluded that the organisms found in the sputum in pulmonary tuberculosis ordinarily play an insignificant part in the disease. In the lung these organisms in tuberculous as in non-tuberculous disease, indicate a condition of lowered resistance.—*Mouse Pathogenic Pneumococci and Streptococci in the Sputum in Pulmonary Tuberculosis, H. J. Corper and J. J. Enright, J. Infect. Dis., September, 1919, xxv, No. 3, 213.*

Fundamentals in Treatment.—The successful treatment of pulmonary tuberculosis depends upon the physician's accurate knowledge of the disease and of the patient, and upon the latter's thorough coöperation. The first essential step is to convince the patient that he has tuberculosis and that he is curable. The second essential step in active cases is to gain the patient's consent to go to a sanatorium or health resort, where he can have proper treatment, proper control and instruction in the right methods of living. The choice of the resort may depend on the circumstances or the preference of the patient. Climate is not so important as the kind of life the patient lives. One fundamental truth in treating the active stage is "rest in proportion to the severity and duration of the symptoms."—*Fundamentals in the Treatment of Pulmonary Tuberculosis, G. Wilson, Med. Clin. North. Am., May 1919, ii, No. 6, 1605.*

Instructions for Consumptives.—Huber's circular of instructions for the use of his tuberculous patients gives a list of the common symptoms of the disease and points out the modern methods of preventing and curing pulmonary tuberculosis. It lays special emphasis upon the important part the patient himself plays in the management and upon the proper disposal of sputum. A description of what is meant by rest and when it is indicated, the fresh air regimen and diet are also given. Cooperation with and obedience to the physician are counselled all the time.—*The Tuberculosis Regimen, J. B. Huber, Med. Rec., August 16, 1919, xcvi, No. 7, 278.*

Absolute Rest in the Treatment of Pulmonary Tuberculosis.—Schaefer emphasizes the great value of absolute rest in the treatment of pulmonary tuberculosis irrespective of its stage. The patient should be put to bed at once and kept there for four to six weeks, during which time he is allowed to arise only once daily for stools. If at the end of this period the temperature has not come down to normal the rest should be made more rigid, a commode or bedpan being substituted for lavatory permission. When this fails to bring the temperature to normal the rest should be made still more rigid, the patient not being allowed to feed himself or to talk. After the temperature has become normal—that is, never above 98.6° F. by mouth—the rest in bed should be continued for at least a month in early cases, for several months in moderately advanced cases, and as long as a year in severe cases. The rest treatment should be combined with full feeding and open air, and all adjuvant measures for resting the lung should be employed, such as pneumothorax, lying on firm pillows, etc. The principle upon which the use of such complete rest is based is that of aiding the formation of firm scar tissue on the lungs about the lesions. In the hands of the author rest in the forms outlined has given the most excellent results, even in cases regarded as almost hopeless.—*Absolute Rest in the Treatment of Pulmonary Tuberculosis, S. W. Schaefer, Colorado Med., July, 1919, xvi, No. 7, 174.*

Rest in Tuberculosis.—The term "rest" as applied to the treatment of tuberculosis should include mental relaxation as well as physical repose. The healing of tuberculosis practically resolves itself into, 1) a process of building up and making the patient strong, and keeping him so for a long time until he becomes master of the invading bacilli, and 2) a stimulation of the patient's specific defensive powers. While rest is usually indicated in the active stage of the disease it is well to remember that one cannot rely on the disappearance of the common symptoms as meaning that the disease is no longer active, nor is it necessary that they all be absent before the process is inactive. Under conditions favorable for healing changes continue to take place in the lung of patients suffering from early clinical tuberculosis for a period of one to two years. Rest should be employed until it is found that exercise will not cause a return or an increase in the clinical symptoms. Rest is also preferable until the breath sounds have assumed the harsh quality characteristic of scar formation. All patients are put to bed on entering the sanatorium. An endeavor is made to secure the maximum possible degree of mental relaxation. In milder cases he may be allowed to get up and wash or go to the toilet. When the time comes to put

the patient on exercise caution should guide each movement. He is first allowed to sit up in bed for five or ten minutes, increasing by five minutes each day. When he is able to sit up three hours he is ready to begin walking. The first day he is allowed to walk about fifty feet and this is very gradually increased until he is able to walk from one to ten miles, depending upon his individual strength. Those able to walk ten miles a day will usually stand a day's work, provided they begin by working only a few hours each day and increase the number of hours gradually.—*The Importance of Rest in the Treatment of Tuberculosis, F. M. Pottenger, N. York M. J., July 19, 1919, xc, No. 3, 89.*

Diet in Tuberculosis.—For the purposes of diet, pulmonary tuberculosis may be divided into three classes: (1) the afebrile cases with fair or good resistance, (2) the febrile cases still showing a fighting resistance, and (3) those cases whose resistance is gone and who are constantly getting worse. In all cases "stuffing" with milk, butter and eggs is to be avoided. Milk products are a useful part of the diet to bring up weight, but it is not always desirable to fatten a patient. In the first class of cases as a general rule the diet should be that to which the patient has been accustomed, plus extra meat; but if the ordinary diet has obvious flaws it should be adjusted and balanced, with due regard to the patient's habits and tastes. Nourishment should not be taken between meals—not even a glass of milk; the meals should be at regular intervals to allow the stomach to rest. The standard sanatorium diet provides three meals a day. The Brompton Hospital Diet includes also tea at 5 p.m., and allows a half a pint of milk before retiring. Patients should be allowed to eat as much as they will, but a minimum amount of fresh meat should be insisted on; fresh green vegetables must always have a place in the dietary; salads and fresh fruits are valuable; potatoes should always be cooked in the skins; cereals and milk, milk puddings, eggs, and bacon are included. Cocoa may be substituted for tea and coffee. Patients of the second class should also be given the full diet whenever they can retain and digest solid food. Every possible endeavor should be made to keep up the standard diet for these cases. If the diet must be changed it is desirable to keep as near to it as possible, substituting chicken, game and rabbit for meat. If the patient cannot take solid food, milk and the liquid milk and meat preparations must be used. The third class can be allowed to eat what they like; nothing can be done to cure them, and no restriction should be placed on their dietary. The patients may be trusted to abandon any diet "followed by pain or discomfort out of proportion to the pleasure derived from it."—*Diet in Tuberculosis and Pulmonary Disease, E. Pritchard, Practitioner, August 1919, 53, No. 2, 143.*

Occupation Therapy.—With regard to occupation therapy in tuberculosis it is possible to divide the tuberculous into four groups: (1) Those who show signs of the disease but few symptoms, who usually recover quickly, but who are difficult to impress with the necessity of sanatorium care. (2) Those showing signs and having symptoms sufficiently marked to feel that they are sick. (3) Those having extensive signs and symptoms, who have probably been treated for other ailments. They have a temperature of 101°, are desperately anxious to get well and therefore willing to coöperate. (4) The old chronics who come to the sanatorium as a last resort for treatment, or to die. Bed occupations may be beneficial to the first and second groups. A man of active mind who has been accustomed to doing many things may find it extremely difficult to coöperate with the requirement of absolute rest. Allowing such man for a part of the day to carry on some light employment or to read, mental rest will be afforded, and thus motor restlessness will be allayed with consequent greater physical rest. Those coming under the last two groups are better off, however, under complete rest. They are too sick to desire occupation. Each individual must be studied as an entity and measures prescribed which will bring about physical as well as mental rest and contentment.—*Occupation Therapy and Tuberculosis, W. R. Dunton, Jr., Med. Rec., June 7, 1919, xcv, No. 23, 941.*

Occupational Therapy.—Occupational therapy has proved itself of sufficient value to be included as a remedial agent of considerable importance in institutions for the treatment of tuberculosis. It must not be assumed that it will prove effective in all cases, nor that it is a simple task to install, organize and continue a model department of it. But 50 per cent of the rank and file of patients can be expected to participate in it and in about 5 per cent some very strikingly beneficial results will be obtained. Long lasting fever will sometimes fall to normal as result of this treatment. It can be prescribed frequently by the physician to curb the restlessness of fiery and temperamental patients. It is frequently educational along esthetic lines, thereby inciting a new cultural interest in the patient's life that might

well become an avocation. It may possess the element of surprise or stimulate mild rivalry between patients. It is within proper limits restful, because a change, and it helps to kill time. When a patient has improved to the point that he is able to exercise two hours a day, he is eligible for transfer and admission to the industrial sanatorium, provided that he has absorbed the knowledge of how to live properly and provided it is important for him to reduce expenses for treatment. The average cash earnings per patient per week were $12.04; the weekly cost of maintenance was between $10 and $12. Thus about 10 per cent of patients were able to support themselves during their treatment. The plans call for an expansion to the establishment of a residential occupational colony, a tuberculosis town.—*Occupational Therapy, B. T. Crane, Boston M. & S. J., July 17, 1919, cxxxi, No. 3, 63.*

Sanatorium Treatment and Military Service.—Details are given of 47 cases that had been under treatment at the Ayrshire Sanatorium and entered the British service during the war. Of these 28 had been in the sanatorium in 1913 or previous years, and had been engaged in their ordinary occupations for some time when the war broke out. Many of these cases were not very favorable, and in many symptoms had existed for prolonged periods before undergoing treatment. Fourteen had tubercle bacilli in the sputum on admission to the sanatorium, 1 reacted to tuberculin, and of those in whom bacilli were not found, 12 were in the second stage and 2 in the third. In the service 1 held a commission, another was offered a commission, 1 won the military medal, 1 was promoted on the field for valor, 2 were sergeants and 3 were corporals, 8 were wounded, 3 gassed, 1 buried alive. Five were still in the service and in good health at the time of the report; 22 were demobilized and working; 9 were demobilized and in good health; 2 could not be traced; 1 had been readmitted to the sanatorium; 3 were killed in the service; 5 died, 2 from influenza, 2 from tuberculosis, and 1 from an operation in the military hospital. One was discharged from the army on account of his heart condition, which was really due to excessive pulmonary fibrosis. Another had had caries of the spine but was on home service through the war, and has been working since. One was in the hospital several months supposed to have pneumonia, but he evidently had an acute attack of tuberculosis; he recovered and went back into service, and since demobilization is working at his trade. These cases indicate that those who have contracted tuberculosis are "worthy of a better fate than to be segregated," for there can be no worse place for an uncured tuberculous patient than the army in time of war.—*Sanatorium Treatment and Military Service, E. E. Prest, Lancet, August 9, 1919, No. 5006, 240.*

Hospitals for Tuberculosis.—Members of the medical profession know only too well the importance of having hospitals for observation of cases of tuberculosis and for watching the results of different forms of treatment, while the community at large feels the need most acutely of provision for those who are in the final stages of the disease and require nursing for months, or possibly for years. On the theory that the tubercle bacillus gains first access to the body at different stages of life, and that every case of pulmonary tuberculosis is a possible source of infection, it would be necessary to isolate and nurse every case until the patient recovered or died. But this is an impossibility at present; sufficient sanatoriums cannot be provided to care for all cases, and if every tuberculous subject in England was to be found and isolated "there would probably be such an upset socially and economically, that there would be a revolution." On theoretical grounds it is true human beings may infect one another through the respiratory tract, but that this is actually the usual mode of infection is difficult to prove. On the other hand postmortem examinations of children dying of some other disease have demonstrated that practically every child is infected with tubercle bacilli in early life; and that pulmonary tuberculosis in adult life is but a later development of an early infection, when for some cause or other the lung tissues prove non-resistant. On this theory the isolation of cases of pulmonary tuberculosis is not necessary. On the other hand there is special need for two types of hospitals; (1) the "observation hospital" to which patients giving symptoms of tuberculosis could come for further study of their case and advice and aid in providing proper treatment, including sanatorium care if necessary; and (2) institutions which may be called "Invalid Homes" where patients who are suffering from pulmonary tuberculosis may be treated and nursed until they are fit to earn their living, or until they die. Such institutions should be located in populous centres where those who are ill may be near their families. This plan would not interfere with the present plan of providing sanatoriums for the treatment of those cases to which it is best adapted.—*Hospitals for Treatment of Pulmonary and Other Forms of Tuberculosis, A National Need, H. B. Shaw, Brit. M. J., July 26, 1919, No. 3056, 97.*

Tuberculin.—Tuberculin neither contains immune bodies nor stimulates antibodies. In acute cases of open tuberculosis all the toxins produced by the tubercle bacilli are thrown into the circulation, and the adding of additional toxin will result disastrously. In chronic cases, the so called closed tuberculosis, where nature has walled off the lesion and toxins are not thrown into the circulation, minute doses of tuberculin will do no harm. It is plain that the formation of antibodies by the cellular system requires the presence of dead or living bacilli, and the action of the leucocytes and the stationary cells. In closed cases no dead bacilli can be picked up or devoured by the leucocytes, hence antigen is lacking. Minute doses of tuberculin may assist in the formation of antibodies which flood the circulation but which cannot reach the encapsulated bacilli to destroy them. If more tuberculin is added, a slow gradual breakdown occurs, the protective capsule is destroyed, and the patient is overwhelmed with toxin. Immune bodies are the product of the cellular system of the body, which includes the ductless glands, plus antigen. Therefore no type of tuberculin is of value. It has been proved beyond doubt that the injection of living or dead bacteria, in small doses and increasing until three or six injections have been given, will immunize an individual to the specific bacteria injected, as typhoid, smallpox, and other infections. But once the disease is established, this injection cannot cure. The only legitimate use for tuberculin is to test animals for tuberculosis.—*Tuberculin in Tuberculosis, M. Staller, N. York M. J., July 26, 1919, xc, No. 4, 148.*

Tuberculin Therapy in Children.—Seven cases of tuberculosis in children and adolescents are described, the ages ranging from six to nineteen years, in which tuberculin was given in small doses. Four of these cases were peritoneal tuberculosis, and three of these were brought under treatment within a few weeks of the appearance of ascites and the improvement was prompt and gratifying; the fourth case gave more trouble and took longer to recover. The cases all illustrate the benefit of small doses of tuberculin and the great importance of bringing the cases under treatment early; the necessity for versatility in selecting the form and dosage of the tuberculin; the desirability of using vaccines, lipovaccines and other modifications of tuberculin, as well as the "accessories" such as sera and organic extracts. Advantage frequently follows a change in the form of tuberculin. It is "worse than useless" to reason out a priori what particular technique and dosage should be adopted for any patient or series of patients. These and other cases in the author's experience lead to the conclusion that children are, generally speaking, more susceptible to tuberculin than adults, and that when the results are favorable they are more quickly and more permanently manifest.—*Some Practical Hints on Tuberculin Therapy in Children, R. C. Newton, Med. Rec., September, 1919, xcvi, No. 11, 459.*

Tuberculin Treatment of Asthma from Tuberculous Glands.—Asthma from tuberculous glands at the hilum or in its vicinity is more common than generally recognized. Tuberculous tracheobronchial glands are not likely to entail asthma except in children with an inherited taint. Tuberculin treatment modifies the asthma, and has cured it completely in a number of cases in his experience. The details of nine cases of the kind are given, showing the improvement not only of the asthma but also in the general condition.—*Tuberculin Treatment of Asthma from Tuberculous Glands, L. Velasco Blanco, Sem. Med., June 12, 1919, xxvi, No. 24.*

Tropical Treatment of Dry Pleurisy.—Cetrángolo reports several cases of pleurisy in which he applied the technic for making an artificial pneumothorax, thus injecting air directly into the focus of the disease. By insufflating 100 cc. of air in cases of plastic-pleurisy, the pain and friction sounds subside, the distention stretching the adhesions. The pain is increased the first day, but then usually disappears completely. From one to three insufflations are made at weekly intervals, with progressive improvement. In some cases the air was medicated, that is, it was passed through cotton moistened with 2 per cent camphorated oil. One insufflation of 100 cc. of the camphorated air cured one man with severe pains in the shoulder, worse during repose and at night. The pain increased after the insufflation, but by the next day had vanished permanently. One man with tuberculous lesions in both lungs and intense pain in the right side was insufflated with 120 cc. of air. The pains grew worse for two days and then vanished completely. The author thinks that he is the first to apply topical medication to suspicious pleurisies with the artificial pneumothorax technic.—*Hacia la medicación topica de las pleuresias secas, A. Cetrángolo, Seman. Med., February 13, 1919, No. 7, 161.*

Induced Pneumoserosa in Treatment of Serofibrinous Pleurisy.—Weil has now a record of fifty cases of serofibrinous pleu-

risy in which he injected air, after evacuating the effusion, until the pressure was the same as before. This insured healing without sequelae in 82 per cent of the cases, and the failures were in cases with preëxisting adhesions or tuberculous lesions in adjoining organs. A complete success therefore can be realized only when the diaphragm is free, but in one case the diaphragm finally regained its full play after a year of treatment, with ten interventions. In 34 per cent, healing was complete in two or three months; in a few in less than a month. In a parallel series of 86 cases simply punctured, without attempting to induce the *pneumoséreuse*, only 16 per cent healed without disturbing sequelae. Of course tuberculous processes elsewhere interfere with complete healing.—*Traitement des pleurésies sérofibrineuses par la pneumoséreuse thérapeutique, M. P. Emile-Weil, Bull. d. l'Acad. d. Méd., June 24, 1919, lxxxi, No. 25, 846.*

Air or Oxygen Injections in Pleural Disorders.—Injections of air or oxygen into the pleural cavity give excellent results in hydrothorax and recurring pleural effusion. They can readily be administered by any practitioner by means of the simple device described. The trocar inserted for paracentesis is also used for the subsequent injection of air or oxygen. The special device consists merely of a short glass tube containing a little absorbent cotton and connected with a piece of rubber tubing 6 cm. long and of such size that it will slip readily over the shank of the trocar. The filtering tube may conveniently be sterilized in a test tube stopped with cotton, or, in an emergency, may be prepared extemporaneously with a little sterile cotton and a boiled tube. At the free end of the glass tube a rubber thermocautery bulb is slipped on, or, if oxygen is to be used, the outlet tube from a bag of oxygen gas. The amount of air or oxygen to be injected varies according to the amount of fluid withdrawn and the degree of chronicity of the effusion. Generally the volume of gas used is much less than the quantity of fluid recovered. The fact should be borne in mind that if pure oxygen is used it will soon be absorbed, while if air is injected, its nitrogen component will remain in the pleura indefinitely. As most rubber bulbs hold about thirty mils of air, any desired amount of gas can be injected by compressing the bulb the required number of times.—*Sur un dispositif simple pour injecter des quantités connues d'air ou d'oxygène filtré dans la plevre, A. Challamel, Bull. et Mém. d. l. Soc. Méd. d. Hôp., January 23, 1919, No. 1–2.*

Artificial Pneumothorax.—During the twenty-five centuries that have elapsed since Greek, and possibly Hindu, physicians cured tuberculosis by rest and a proper diet, at least two things of real value have been added to the treatment: more rest and more attention to the diet. The phthisiotherapeutist must be an optimist. Given suitable economic conditions that enable him to enforce his regimen of rest and diet, he can frequently make a favorable prognosis. Certainly few infectious diseases offer the body a greater opportunity for successful resistance than does tuberculosis. The wisdom of the policy of noninterference has become so generally recognized that we are today perhaps overcautious and too conservative in our judgment of procedures that savor of active intervention. Among these is the use of artificial pneumothorax. Developed as an adjunct of rest therapy, it offers, in its ideal utilization, the utmost that we can expect from absolute rest.

Aside from the reluctance to depart from the policy of letting well enough alone, there is an impression among many physicians that the procedure is dangerous. Untoward results, however, have been limited virtually to the cases in which too large amounts of gas have been injected at the early fillings. These larger amounts of gas have been given on the false assumption that if a little gas is good, more will be better. Forlanini himself, in his first publications, warned against the use of large amounts of gas. He limited the amount injected at any one sitting to from 100 to 300 cc., but the early advocates of his method in this country (Murphy) and in Germany (Brauer) used larger amounts with admittedly spectacular but occasionally unfortunate results.

Murphy, however, laid great emphasis on the use of artificial pneumothorax earlier in the course of the disease. Then its effect might be assumed to be curative rather than merely palliative, as is so frequently the case when used in tuberculous patients in the utterly hopeless terminal stages of the disease. There is much to justify this position. Since pleural adhesions are the chief factor in the nonsuccess of the method, we should seek to apply the pneumothorax at a time when such adhesions are likely to be less frequent. They are found commonly enough in the routine postmortem examination of bodies that present otherwise normal lung findings. In cases of tuberculosis, in which the rich lymphatic network of the visceral pleura is so often the site of early extension, fibrinous and fibrous adhesions can be taken for granted in practically every case. The earlier the pneumothorax

is attempted, the less likely it will be that adhesions will prove too extensive for favorable collapse therapy.

The end-results of treatment described by Beggs, Minor, Morris, and Kendall and Alexander, seem to warrant definite confidence in the usefulness of the method in cases that are advancing despite the ordinary regimen of rest and diet, and perhaps also in early cases in which, because of unfavorable economic conditions, we cannot be assured that the patient will have the advantage (or at least the maximum benefit) that are possible under the usual hygienic and upbuilding methods.

It has been found in actual practice that the theoretical advantages of collapse therapy are fulfilled to a large degree, even when we cannot be certain that we have attained a complete result. The relative bloodlessness and the stasis of the lymph currents of the collapsed lung are followed by a lessening of the toxemia because of the decrease in the absorption of toxic material; the chances for dissemination of the infection are diminished; the rest accelerates cicatrization. To be weighed against these advantages is the possibility of activating a dormant focus of the opposite lung on which the entire task of ventilation is imposed. In hemorrhage, occasionally in lung abscess, and in some cases of bronchiectasis, ordinary contraindications must frequently be disregarded in view of the mechanical benefits of immediate compression and the relief thereby gained.

Artificial pneumothorax is today a relatively safe procedure. With gas injected under aseptic precautions, controlled by the roentgen ray and the manometer, and given in the small amounts insisted on by every conscientious worker, few complications need be feared. At present the method is seldom used except by the specialist in the tuberculosis field. The vast majority of tuberculous patients, however, are treated not by specialists but by the general practitioner, and there is no valid reason why a safe remedial measure should be withheld from the patient, who not infrequently is seen at a time when the pleural conditions are still favorable for the successful use of the pneumothorax.

If soldiers can be kept on active duty with a pneumothorax that is refilled at definite intervals, as they have been in the French army, there is no reason why, in times of peace, we cannot keep many patients in active, normal life and gaining a livelihood at their usual occupation. Under such conditions we are more likely, also, to keep the lung compressed for a longer period of time than if the patient is treated for a relatively short term at some institution and returns then to his former environment without further supervision. Keeping in mind the fact that collapse therapy is really rest therapy, Morris has well emphasized that it is much safer to keep a lung compressed too long than not long enough.—*Artificial Pneumothorax, Editorial, J. Am. M. Ass., September 6, 1919, lxxiii, No. 10, 769.*

Artificial Pneumothorax.—Artificial pneumothorax is not a routine method of treatment of pulmonary tuberculosis in whatever stage. It is indispensable in treating certain selected cases which do not respond to the routine sanatorium treatment, and in serious cases of hemoptysis. Only 21 patients received the treatment during the three years 1911–14. Two of these were in the incipient stage, 10 were moderately advanced and 9 far advanced. The results have been such as could not have been obtained without this method. Fourteen or two-thirds were benefited and 7 were not improved. In cases of hemoptysis the results have been gratifying. Absolute rest in bed during the early weeks of the treatment is essential in order to increase the resistance of the patient and to enable him to take care of the extra function called forth from the uncollapsed lung, the absorption from the collapsing lung, and displacement of the heart. No bad effects have been noted during the treatment and with proper consideration of the technique as regards asepsis, thorough anesthetization of the subcutaneous tissues and pleura, and regulation of interval between doses, the amount and temperature of the gas, and the rapidity with which it is introduced, the dangers may be greatly overcome.—*The Value of Artificial Pneumothorax Therapy as Associate Treatment of Pulmonary Tuberculosis, L. A. Alley, Boston M. & S. J., June 12, 1919, clxxx, No. 24, 668.*

Artificial Pneumothorax.—Between August 1910 and December 1916, 21 patients with severe pulmonary tuberculosis had pneumothorax induced artificially except in one case. The one exception had developed a spontaneous hydropneumothorax, which was converted into a controlled pneumothorax. Eleven of the 21 are alive and all but 2 of these enjoying good health and following their usual vocations. Nearly all of the 10 who died had their symptoms alleviated and their lives materially prolonged. Every case in the series had tubercle bacilli in the sputum, and in nearly every case a situation had been reached that was quite hopeless without the artificial pneumothorax. During the same period an attempt was made to

induce pneumothorax in six cases in which it failed completely on account of adhesions; and ineffective partial pneumothorax was induced in seven other cases. All but one of these patients are dead; the one living does not enjoy good health and cannot follow his occupation. From the experience in these cases the author draws the following conclusions: (a) In the earlier stages of the treatment, up to about 18 months, there is greater likelihood of injecting the gas too seldom, and making the pressures too high than of erring in the opposite direction. (b) The abandonment of the injections of gas in a successful case after too short a period is a far worse error than the continuance of refills too long. (c) It is by no means an invariable rule for the pleural surfaces to become adherent after the injections have been given up. (d) Every endeavor should be made to keep the pneumothorax cavity a closed one; the only exception is in the presence of secondary microorganisms. (e) Those cases in which fluid developed at any time in the course of the treatment need special care. In these cases there is commonly some interference with the spacing of the injections of gas; fluid generally tends to keep intrapleural pressures up; and it is more likely to be followed by thickened pleura and adhesions. Hence it is customary to keep pressures rather higher in such cases. In considering the results of pneumothorax it is surprising to see how small the visible deformity of the chest is. Little difference is observable in some cases on casual inspection; in others only a very slight inclination to the "barrel-shaped" type of thorax. In many cases, however, the ribs come very close together by degrees, and in most the inflated side of the thorax is partly filled by displaced mediastinal and subdiaphragmatic organs, such displacements being more common on the left side than on the right. An artificial pneumothorax if effective should be kept up for at least three years. Under the following circumstances it should be kept up for at least four and a half years: (1) if the patient is over 33 years and has lost the resilience and recuperative powers of youth; (2) if the compressed lung was a fairly useless one before beginning treatment and was producing chronic poisoning; (3) if things are going well during the maintenance of compression. Compression may have to be maintained indefinitely in some cases, in others it may have to be abandoned prematurely; occasionally the treatment has to be abandoned after a long time, because it is found to be very difficult, or impossible, to continue it. No hard-and-fast rules can be laid down respecting the spacing of doses in the late stages of treatment, nor respecting the pressures. Low pressure readings are important, because before starting the refill preparations for the low negative pressure must be made.—*The Effects of Artificial Pneumothorax, S. V. Pearson, Lancet, July 26, 1919, No. 5004, 148.*

Treatment of Pulmonary Tuberculosis in Children by Artificial Pneumothorax.—Stolkind reports seven cases. The ideal case for artificial pneumothorax is one of advanced pulmonary tuberculosis or the so called second or third stage, with destructive or ulcerative one-sided disease, in which the other lung is, clinically at least, normal. Such typical cases of advanced and progressive pulmonary tuberculosis, in which only one lung is diseased and the other clinically healthy, are rare. In the majority of cases it is found that the other lung is also diseased more or less. In such cases pneumothorax treatment is employed if the disease in the other lung is inactive or chronic and quiescent. If extensive chronic lesions in both lungs are found, pneumothorax must be performed in the most diseased lung first. Afterward, if it is necessary and there is considerable improvement, the gas can be allowed to become absorbed or it may be pumped out, and then a pneumothorax can be performed on the other lung. This treatment is also used in cases in which the disease is not much advanced or in the first stage of the process, in spite of proper treatment by other means, advances and especially if it progresses rapidly, or if there are symptoms of toxemia. As there is at present no sure means of stopping hemorrhage, pneumothorax is indicated in cases with recurrent hemoptysis, and if the hemorrhage is severe or cannot be otherwise arrested. The lung from which the bleeding comes should be recognized and completely compressed, for which purpose 2000 to 3000 cc. of gas are introduced. Another indication is in cases of acute and progressive disease or acute tuberculous pneumonia or bronchopneumonia. The other indication is pulmonary tuberculosis with effusion of either blood, serum or pus. In carcinomatous pleurisy artificial pneumothorax is beneficial in relieving the pain. Pleural adhesions are not a contraindication, but may prevent the production of a pneumothorax or a complete collapse of the diseased lung. Pneumothorax treatment is contraindicated in cases of pulmonary tuberculosis complicated by other severe disease, such as affections of the circulatory system, liver, kidney or severe diabetes and emphysema. No more than 500 cc. should be introduced at one time

and radioscopy should be used as a guide, both as to the extent of the initial introduction and as to the necessity of a refill. In children anesthetics should be used when the treatment is given. The most frequent complications are subcutaneous emphysema and pleural effusions. The emphysema is harmless and disappears in a few days. The pleural effusions may appear at intervals ranging from weeks to months after introducing the gas. It is mostly due to infection which is chiefly tuberculous. The improvement which is often observed in phthisis after the occurrence of pleural effusion is due not only to better rest and immobilization of the compressed lung, but probably also to the serobiological influence of the exudate, which contains many antibodies or hemolytic and bactericidal complements.—*The Treatment of Pulmonary Tuberculosis in Children by Artificial Pneumothorax, E. Stolkind, Brit. J. Child. Dis., January-March 1919, Nos. 181-183, 116.*

Effects of Roentgen Ray on Tubercle Bacilli.—Nine guinea pigs were injected subcutaneously in the left inguinal region with the filtrate from the livers and spleens of two advancedly tuberculous animals. Four days later, before there was any sign of local glandular involvement, two of the pigs were rayed over the region of inoculation, the rest of the body being covered by a ¼ inch lead plate. For one, the dosage was 50 milliampere minutes with a 9-inch spark gap at a distance of 8 inches, for the other 25 milliampere minutes under the same conditions. Filters were used to prevent burning. The two animals developed local tuberculosis as rapidly as the controls. Five of the other seven animals were rayed after marked local glandular enlargements had developed. Two were rayed 25 milliampere minutes, two 30, one 50, and one 75. Thirteen days later all the pigs were killed, the glands ground with sterile saline solution, and the fluid injected into nine other pigs. In all cases, tuberculosis was produced in the second set of animals. Roentgen rays in human dosage neither prevent the development of experimental glandular tuberculosis, nor destroy the organisms in fully developed lesions.—*Some Effects of Roentgen Rays on Certain Bacteria, M. W. Perry, Am. J. Roentgenol., September 1919, No. 9, 464.*

X-Ray Treatment in Tuberculous Arthritis.—The benefits obtainable from the X-ray in tuberculous joint disease are not sufficiently appreciated. Three cases are reported involving, respectively, the ankle, elbow, and vertebrae, in which apparent recovery followed their use. In the spinal case, the fourth and fifth lumbar vertebrae had been curetted two months before the author was consulted, but the wound had not healed and the infection had extended to several different points in the lumbar region. The X-rays were directed over the whole region every fortnight for three months, when treatment was interrupted by a severe attack of influenza. Three months after the interruption, when the patient returned, the wound and all the sinuses but one had closed, and the latter healed three months later. Treatment was kept up at longer intervals for several months, and no recurrence took place. In the elbow case, the area had been curetted three times in the course of five years, yet fungous tissue recurred. X-ray exposures every twelve days resulted in recovery in two months, and the results have now been maintained six years.—*Traitement des arthrites tuberculeuses par la radiothérapie, A. Briton, Presse Méd., June 12, 1919, No. 33, 320.*

Heliotherapy School.—Last year Armand-Delille organized a sun bath school, like Rollier's at Leysin, for the children of repatriated tuberculous women. The school was in a hilly region in Savoie, and every pleasant day forty or fifty children, dressed only in trunks, held school out of doors. They returned to the school building for lunch, and on rainy days the children were dressed and stayed under a shelter. The classes alternated with games and gymnastic exercises, and the children were thus engaged from 8 till 4.30. By the end of a month the favorable influence was evident, and by the end of three or four months the physical transformation was complete. The suspicious glands could no longer be felt. Similar results were obtained at the Sylvabelle station (Var) with 125 repatriate children who took sun baths without clothing all winter long. These experiences were on a scale large enough to fully confirm the necessity for heliotherapy as an integral element in outdoor schools. He does not hesitate even to declare that a course of preventive heliotherapy should form part of the hygiene for every child. It can be easily arranged on this principle of the sunlight school. Of course medical supervision is necessary, particularly as a course of sun baths may be dangerous with pulmonary tuberculosis on account of the congestive reactions which it may induce. With this reserve, preventive heliotherapy is a powerful means for fortifying the organism, and is es-

pecially effectual in treatment of localized tuberculous lesions in glands.—*Heliothérapie préventive de la tuberculose chez l'enfant. L'école au soleil, Armand-Délille, Bull. de l'Acad. d. Méd., June 24, 1919, lxxxi, No. 25, 840.*

Injections of Cherry-Laurel Water in Chronic Bronchitis and Pulmonary Tuberculosis.—The benefit observed from selenium and copper salts in tuberculosis is due largely to the cyanide radical with which the metals are usually combined. Benzoyl cyanide in oily solution gives better results than the metallic cyanides. More recently Grimberg has been using the official French cherry-laurel water, which contains about 1 mgm. of free hydrocyanic acid in every mil of solution. Experimentation on the lower animals showed that the preparation is relatively but slightly toxic. Symptoms of poisoning did not appear until a dose of 0.2 mil per kilogram of animal was reached. The heart continued beating a long period after respiration had ceased, and elimination of the poison was very rapid. Clinically intramuscular and intravenous injections were used in about twenty cases, and the present paper is in the nature of a preliminary report. The intravenous injections seemed to yield more rapid results. The injections were given twice daily, with a dose of one mil. No local reactions followed. In cases with hemoptysis some caution is necessary in employing the treatment; in cases with fever no rise in temperature was ever induced. Improvement appeared after six to eight injections, the symptoms being relieved in the following order: dyspnea, cough, anorexia, and insomnia. Patients with fibroid tuberculosis seemed to experience the most relief from the treatment. Chronic bronchitis, whether tuberculous or nontuberculous, was regularly improved. In some instances a notable gain in weight followed. Generally the temperature was reduced, though only after about twelve injections.—*Traitement des bronchites chroniques et de la tuberculose pulmonaire par l'injection d'eau distillée de laurier-cérise, A. Grimberg, Paris Méd., February 8, 1919, No. 6, 125.*

The Inhalation Treatment in Pulmonary Tuberculosis.—Frequently the tubercle bacillus enters the body during the prenatal period of the individual. Ninetv per cent of all phthisis has its inception in utero. The other 10 per cent may have contracted the infection. The mere entrance of the bacilli into the tissues does not produce phthisis. Most of the bacilli that enter the body are quickly destroyed the moment they come into contact with the blood of the individual. The bacillus of Koch cannot live long in live human blood. If the bacillus after entering the system multiplies, it is a sure sign that somewhere in the body it has found a bloodless area. Anemia is a prime requisite for the future existence, multiplication and propagation of this germ. Anything that will prevent anemia will prevent phthisis. The prevention of anemia is the only real, natural physiologic system of prophylaxis. After phthisis has occurred the conditions have changed. The bacillus by itself is quite harmless, billions could and perhaps do invade the body of the average human being. The bacilli themselves have never killed anybody. It is a certain toxic substance, the result of the metabolic processes, that does the poisoning. The metabolism of the bacillus cannot take place without a preëxisting anemic area. In order to insure the continued existence of the bacillus, it furnishes the toxic material which in turn causes a localized blanching; hence the anemia. All the antiseptics, creosote, camphor, phenol, gomenol, iodoform and turpentine, when inhaled in a volatilized state enter with the air current. There is no doubt that such a medicated air mixes with the blood and that it is carried to all parts of the body. All of these antiseptics are foreign to the physiology of the economy. Since they are foreign bodies the system reacts to them. If this reaction is one of generalized hyperemia it is at least logical to account for the prompt general improvement, increased appetite, gain in weight, etc. In other words, the antiseptics as such play but minor parts, but the reaction to such an irritant, when inhaled for an hour daily, may remove the first requisite, namely, the anemia. When the anemia is thus overcome, bacilli fail to multiply, the protein toxic element emanating from the germ is no longer produced, hence corresponding improvement in the condition of the patient. Geyser has demonstrated that blood, normal blood, and plenty of it in the lungs leads to a recovery where recovery is still possible. If diathermia is applied to the regions of the lungs for one hour or more daily, the patient put upon a suitable diet, rich in lime salts, proper rest and hygiene are carried out, many cases of phthisis will make a permanent recovery.—*A Few Derogatory Remarks Concerning the Inhalation Treatment in Pulmonary Tuberculosis, A. C. Geyser, West. M. Times, May 1919, xxviii, No. 11.*

Tincture of Iodine in Tuberculosis.—Ritter strongly advocates the administration of tincture of iodine in tuberculosis, erysipelas, and other infectious diseases. He attributes its beneficial action in tuberculosis to the production of lymphocytosis with a

resultant fat splitting element which dissolves and breaks up the tubercle bacillus, which is of a fatty nature. The vehicle of choice is milk, beginning with one drop of tincture of iodine in a half glass of milk at the first meal, two at the second, three at the third, and so on until a dose of twenty or thirty drops is reached.—*Tincture of Iodine in Intensive Doses in the Treatment of Tuberculosis, J. Ritter, Ill. M. J., June 1919, xxxv, No. 12.*

Operative Treatment of Tuberculosis of the Larynx.—In six years 575 cases of laryngeal tuberculosis were treated at Davos, Switzerland. 1548 operations were performed: 61 times curetting only, 168 times both curetting and cauterization, and 1319 times electro-cauterisation. In every case there was an accompanying pulmonary tuberculosis, usually of the third degree and stationary. In 39 cases the pulmonary lesion was unilateral, in 25 on the right, and in 14 on the left. In the 25 right sided patients only the right side of the larynx was affected in 5 cases; only the left side in 4 cases. Of the 14 left-sided cases, the left side of the larynx was affected in one case, the right in two cases. In 259 cases the laryngitis was limited to a circumscribed focus and was stationary; in 265 cases there were multiple but limited foci without a tendency to rapid progression; and in 59 cases there were diffused foci with rapid progression and caseation. The tuberculous lesions were situated most frequently on the vocal cords. In summarizing the results, 154 cases which could be traced for a month or less are eliminated, and also 34 serious cases which were operated only to relieve suffering. In the remaining 387 cases, of 180 in the first stage, 89 or 49.4 per cent were cured; of 192 in the second stage 48 or 25 per cent were cured; of 15 in the third stage 2 or 13.3 per cent were cured. The best results (52 per cent of cures) were obtained by electrocauterization of the cords. These results indicate that tuberculosis of the larynx can be cured. A considerable proportion of cases where the laryngeal symptoms did not improve under treatment which did improve the pulmonary condition, were cured by operation. Operative treatment of tuberculosis of the larynx should be undertaken only in cases where there is no fever and the pulmonary condition is stationary, except where urgent symptoms demand interference. The best method is electro-cauterization (Mermod-Siebenmann's method) with its broad and deeply destructive radical effect. Only in tuberculosis of the epiglottis was curetting more effective. Operative treatment in several instances exercised a favorable influence on the lungs and the general condition. The experience at Davos proves that high altitude is not contraindicated in tuberculosis of the larynx.—*Observations on the Operative Treatment of Tuberculosis of the Larynx, T. Ruedi, Brit. M. J., June 21, 1919, No. 3051, 764.*

Radical Operation for Genital Tuberculosis.—Advanced genital tuberculosis is so prevalent and such a progressive affection that any method, however radical, which offers a chance of recovery, is worth serious consideration. The operation found suitable for the removal of all diseased tissue consists of the removal of the testicle through an incision extending into the inguinal region in the usual way. The cord is then freed from the surrounding tissues as far into the inguinal canal as possible and there clamped and cut off. The patient is then placed in the lithotomy position and a semilunar incision made with its convexity anteriorly, and extending between the tubera ischii. After dividing the central tendon of the perineum, the rectum is pushed backward and by blunt dissection, following the plane of the rectovesical fascia, a deep pyramidal shaped wound is made which gives easy access to the prostate and seminal vesicles. By pushing the finger up to the apex of this deep wound and by pushing down on the forceps, which have previously been clamped to the cut end of the vas deferens in the inguinal canal, it is possible to push this clamp through into the perineal wound, carrying the cord with it. By removing this anterior clamp and replacing it with another through the perineal wound it is possible to remove the entire vas and ampulla with the seminal vesicle on the same side, and the lateral lobe of the prostate. It is important not to perform the prostatectomy first. After the operation tuberculin therapy is instituted and the recovery which some of these patients make is marvelous. Patients showing the slightest lung involvement should be considered inoperable. Their operative wounds fail to heal and only add to their discomfort.—*Radical Operation for Genital Tuberculosis, G. S. Whiteside, Northwest Med., May 1919, xviii, No. 5, 83.*

Spine Graft in Pott's Disease.—The main idea of the Albee operation is that of fixation of the affected vertebrae with those above and those below by an autoplastic graft from the tibia; it is based upon the possibility of controlling all movements of a section of the vertebral column by immobilization of the spinous processes. The vertebral column is built up in such a way that there is no locking or automatic stabil-

ity in any position and the immobility of the joints depends entirely on muscular tone and balance. The operation tends to give (1) permanent immobility in the corrected position; (2) a greatly reduced period of confinement to bed; (3) a safeguard against recrudescence of the disease. It is of benefit in all cases of unhealed tuberculous disease of the vertebral bodies, where there are no contraindications. The latter are: tender age (before the third year), great activity of the disease, affection of the atlanto-occipital and atlanto-axial region, a discharging sinus, or other septic focus, and open abscesses. An unopened psoas or lumbar abscess is not a contraindication if it is not necessary to operate through the abscess.

As soon as the diagnosis of Pott's disease is made, a definite course of preoperative treatment is begun, consisting of: (1) splinting usually with the double Thomas frame, sometimes with plaster of Paris; (2) reduction of deformity where indicated by gradual means; (3) general treatment including good feeding, open air, warmth. The methods of splintage are described in detail for the following "regional groups:" (1) Mid dorsal, low dorsal, dorso-lumbar, high lumbar; (2) high dorsal, cervical; (3) low lumbar; (4) lumbo-sacral.

During the operation, the operating room and table should be kept warm; any movement of the spine should be prevented; hammering should be avoided except the few taps necessary for the conversion of the drill holes into transverse cuts in getting the graft from the tibia. Ether is preferred to chloroform as an anesthetic. After the operation treatment for shock is indicated for the first few hours. The first dressing is done four, seven or ten days after operation, depending on indications for early dressing such as discomfort, sharp bony prominences, or poor nutrition of the skin. For the dressing the cuirass is specially indicated; the arrangement of the protective padding round the graft areas being done by the surgeon. This padding must be thick and so arranged that the weight is off the entire operation area. The patient is turned about once a week. In all cases of group 1 where a strong graft can be firmly placed and where the angulation is not great the frame is changed for a light spinal support (Jones') at the end of three months; the patient is kept in bed for another month and given massage, then sits up in a chair and is soon able to walk. The support is worn for a year. In the other groups light plaster jackets are used. In younger children, where the graft is not so strong, and in cases where the spine is short or angulation marked, six months or more in bed are required, the spinal support is kept on more than a year and removed only gradually under supervision. A table of 50 cases is given.—*Pott's Disease and Albee's Spinal Graft, G. R. Girdlestone, J. Orthrop. Surg., July 1919, xvii, No. 7, 401.*

Thoracoplastic Operations for Pulmonary Tuberculosis.—Saugman reviews the experiences in this line at the Vejlefjord Sanatorium, a total of twenty-six operations in the last two or three years. The indications for the operation were about the same as for artificial pneumothorax; in fact, this had been attempted in every case beforehand. Local anesthesia is very important, and it is astonishing to witness the patient's indifference to the extensive operation. One patient began to converse on some trivial subject in the midst of the operation. Large amounts of the anesthetic are required to block the nerves, and one girl of eighteen, in good condition, died soon after the operation. It had been hastened on account of her collapse, so that the resection of five ribs and the suturing took only fourteen minutes; 190 cc. of a 0.5 solution of procain (novocain) had been used in this case, after a preliminary injection of 0.015 morphin an hour before the operation. She had also been given a little sedative the evening before. Necropsy failed to explain the cause of death. In another case, signs of intolerance were evident from the first, and the attempt to use local anesthesia was abandoned. The local anesthesia does away with the danger of aspiration of secretions and the whole procedure is much easier for the patient. In one case an abscess in the lung was cleared out, after resection of three ribs, the patient sitting erect in a chair all the time. The total length of the ribs removed ranged from 80.5 to 172 cm., with 134 cm. as the average. There did not seem to be any advantage from including the eleventh rib in the resection. The pains after the operation seemed to be less severe in the cases in which the ribs had been resected subperiosteally. For this reason, operating in two sittings has its advantages. The after-care is extremely important, to ward off aspiration of mucus into the sound lung, and to give stimulants for the heart in case it shows signs of weakening. The thorax sank in after resection of the ribs, so that the chest on that side was only a half or third of the size of the other half of the chest, as was determined at necropsy in one case with death seventeen days after the operation. Twelve of eighteen patients apparently lost the tubercle bacilli completely from the sputum in the course of a few months. In two or three cases recurring hemoptysis called for the operation, but in

another case fatal hemoptysis occurred the seventeenth day after the operation. Possibly in this case the reduced ability to cough up the blood may have contributed to the fatal outcome, as the hemorrhage had been small. In the other case, pulmonary embolism the second day was responsible.—*Erfaringer fra Hejelfjord Sanatorium om Thorakoplastik ved Lungetuberkulose, Chr. Saugman, Ugeskr. f. Laeger, April 3, 1919, No. 14, 585.*

Endothelial Leukocytosis in Tuberculous Guinea-Pigs.—The percentage of endothelial leukocytes in normal guinea-pig blood varies considerably, as it does in human blood; in fifteen animals, the average was 1.58 per cent, the figures varying from 0.5 to 3.1 per cent. A leukocytosis may be produced by infectious agents or by chemical substances. In these experiments synthetic dyes were used, and it was found that Sudan III in large doses produces quite regularly an increase above the maximum of 3.1 per cent met with in normal guinea-pigs; in no case was an increase to 10 per cent noted. In the later stages of tuberculosis in guinea-pigs "induced in the usual way" the percentage of leukocytes found in the experiments with Sudan III is quite regularly exceeded, and this leukocytosis persists until the animal's death. The increase may appear within two weeks of the inoculation. In eight counts on six tuberculous animals, an average of 10 per cent of endothelial leukocytes was found; in one animal the figure reached 16.3 per cent. This form of leukocytosis is not noted as occurring in human subjects with tuberculosis, although it is apparently typical of the usual experimental tuberculosis of guinea-pigs.—*An Experimental Endothelial Leukocytosis in Guinea-Pigs, F. A. McJunkin and A. G. Charlton, Arch. Int. Med., September 1919, xxiv, No. 3, 295.*

Tuberculosis in Mice.—Experimental studies led to the following conclusions: (1) White and grey mice and white rats are less resistant against subcutaneous inoculation of tuberculosis than is generally admitted. (2) The experimental lesions are slow to develop, hardly manifest themselves, are sometimes only recognizable by microscopic examination and are almost always localized in the lungs. (3) The tuberculous virus does not lose any virulence by passing through mice, but seems even to gain. (4) A certain strain of bacilli retains its characteristics even after several passages through mice. (5) The infected animals can disseminate tubercle bacilli with their excreta. (6) In view of the slow evolution of experimental tuberculosis in rats, and in view of the conservation of the typical characteristics of the inoculated virus, these rodents could be advantageously employed in laboratories for the conservation of a given strain, thereby effecting a saving of animals. (7) For diagnostic purposes, however, mice and rats could not take the place of guinea-pigs just on account of the slow development of the infection. (8) For the differentiation of the human and bovine type, rabbits are far superior to rodents.—*Etudes sur les actinomycetes. Recherches expérimentales sur la tuberculose des muridés, B. Galli-Valerio, Corr. Bl. f. Schweiz. Aerzte, August 28, 1919, xlix, No. 35, 1309.*

Effect of Thorium X on Anaphylaxis in the Guinea-Pig.—It has been suggested that the greater part of the difference between tuberculosis in children and in adults, as well as the difference between chronic and miliary tuberculosis, is to be explained on the basis of the allergic condition of the patient. It was thought that if the allergic condition in guinea-pigs could be reduced, such animals would show marked differences in their reactions as compared with allergic animals not thus treated. Thorium X was used in the experiments, administered in a 0.9 per cent sodium chloride solution. Three separate protein mixtures were used for producing anaphylaxis—egg white, normal horse serum and milk. The results showed that thorium X given in about one-half the lethal amount seven days before or coincident with the primary injection of any of the proteins, or seven days before or coincident with the second injection had no appreciable effect on the severity of the anaphylactic symptoms in guinea-pigs on reinjection of protein sixteen to eighteen days after the primary injection. Likewise the repeated injections of smaller doses of thorium X sufficient to maintain a leukopenia as low as 2000 leukocytes per cubic millimeter throughout the entire interval of sixteen to eighteen days between the first and second protein injections or very small repeated injections not sufficient to affect the number of peripheral leukocytes perceptibly, had just as little effect on the severity of the anaphylactic symptoms. This method therefore proved impractical for the study of allergy in tuberculosis. These results do not agree with previous experiments on the effect of the roentgen ray and benzene on anaphylaxis, and indicate the need of further study.—*Effect of Thorium on Active Anaphylaxis in the Guinea-pig, H. J. Corper, J. Infect. Dis., September, 1919, xxv, No. 3, 248.*

Test of Recovery from Pulmonary Tuberculosis.—It is not as yet possible to make certain of recovery from phthisis by clinical procedures of examination, however carefully conducted. Complete disappearance of tubercle bacilli from the sputum for a period of at least one year is, of course, the initial test. Negative guinea-pig inoculation and albumin reaction should be obtained. Complete absence of expectoration is not to be expected, as expectoration free from tubercle bacilli may result from fibroid changes or bronchitis. The tuberculin test should be carried out, but not relied upon too much. The X-rays, while they permit of following out local improvement, do not definitely reveal complete recovery, as a scar alone will give a shadow. The body weight and blood pressure should have remained unchanged for some time at reasonably high figures. Absence of temperature rise after any amount of muscular exercise is another necessary condition. Prolonged absence of all adventitious sounds during deep inspiration after cough is an important indication, especially upon auscultation in the outer portion of the infraclavicular fossa, at the anterior margin of the trapezius. When all these indications have remained favorable for twelve to fifteen months, the author, in order to make a definite decision as to recovery, which would permit of the patient's resuming all usual social relations, applied what he terms "the test of progressive adaptation to activity." This test covers three months, and consists in having the patient work, at first for a few hours, morning or afternoon, on alternate days, then for a gradually increasing number of hours, morning, afternoon and evening. During the first two months rest days are interspersed with diminishing frequency. In the third month, no rest days are given. Throughout the test period the patient's weight, temperature, blood pressure, and auscultatory signs are recorded at regular intervals. Any rise in temperature, cough, increase of expectoration, or râles below the clavicle on inspiration rendered the test negative. The author has been using the test for seventeen years. In two thirds of the patients who passed the test successfully, health was subsequently maintained for periods ranging up to seventeen years. The test is best made in the late summer and fall months.—*Une épreuve de guérison de la tuberculose pulmonaire, L. Renon, Bull. d. l'Acad. d. Méd., June 3, 1919, lxxxi, No. 22, 761.*

Prophylactic Vaccination of Tuberculosis.—The vaccine used is the sensitized bacillary emulsion prepared with the avirulent strain obtained by cultivating the common virulent tubercle bacilli in a medium containing trypoflavin. The emulsion contains, besides the sensitized bacilli, a certain amount of the filtrated fluid of erythrodin broth medium. It, therefore, consists of the whole antigen of tubercle bacillus. Good results are claimed for this procedure.—*Prophylactic Vaccination of Tuberculosis, K. Shiga, Japan Med. World, May 11, 1919.*

Vaccination in Prophylaxis of Tuberculosis.—To Ferrán the tubercle bacillus is only the third phase in the life of the microorganism responsible for tuberculosis. His later research has confirmed him more and more in his views and in the efficacy of vaccination based on them. The first stage of the microörganism he calls the alpha stage. The bacillus then is merely an ordinary nontoxic saprophyte, but under certain conditions it induces phlegmasia and even galloping consumption but without tubercle production and without true tubercle bacilli. The second stage of the microörganism corresponds to Much's granules, and the third stage is the true tubercle bacillus. The importance of this conception lies in the fact that by a vaccine prepared against the first phase, the nonacid resisting alpha bacillus, the system is immunized against it and thus the whole chain is broken up and it does not progress to the other stages. It is easy to cure this phase of pretuberculosis by the alpha bacillus vaccine, but once the second or third phase is reached and the true tubercle bacillus installed, vaccine treatment is impotent. Castroman reiterates that the hopes based on tuberculin treatment of this phase have not been realized in practice.—*Nueva ciencia antituberculosa, M. R. Castromán, Seman. Med., May 15, 1919, No. 26, 507.*